



ANNUAL REPORT  
OF THE  
ALL-INDIA INSTITUTE OF HYGIENE  
AND PUBLIC HEALTH,  
CALCUTTA

10921, 10922, 10923

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1955-56

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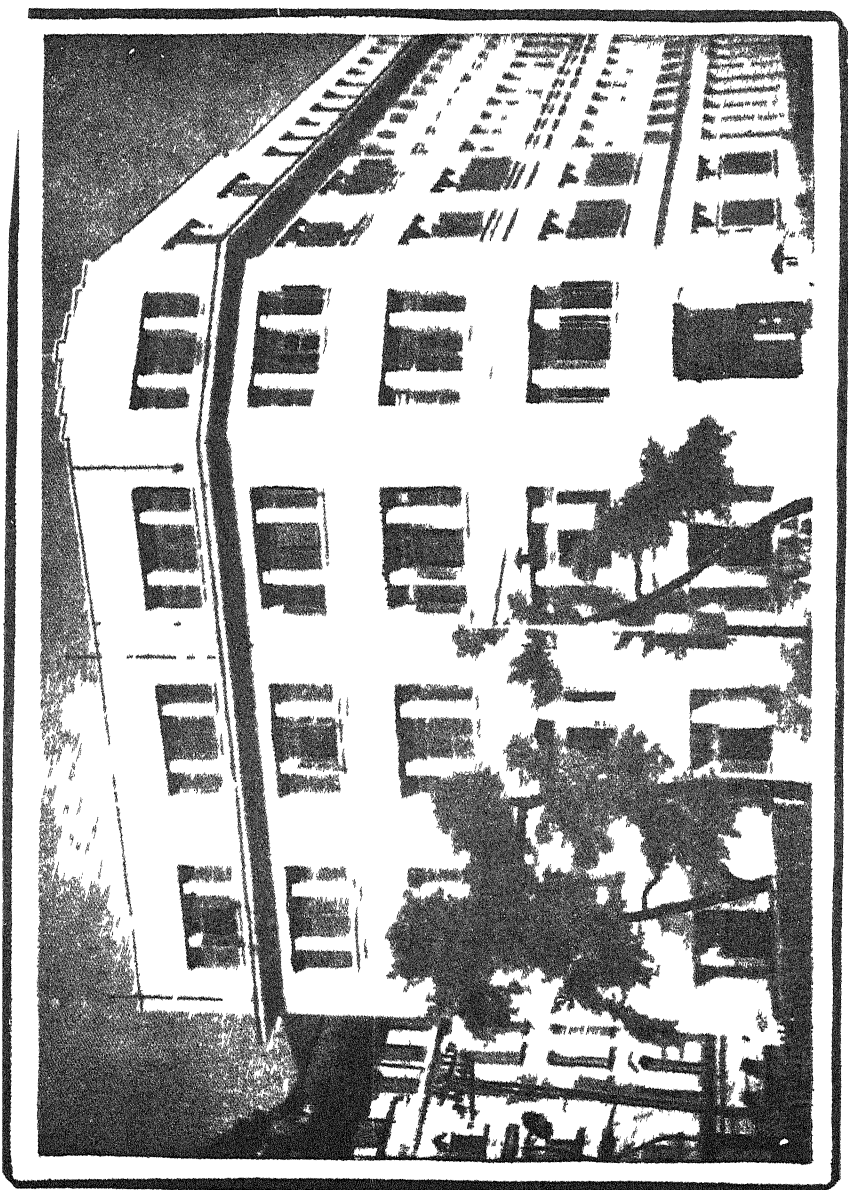
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ALL INDIA INSTITUTE OF HYGIENE AND PUBLIC HEALTH, CALCUTTA.



ALL INDIA INSTITUTE OF  
HYGIENE AND PUBLIC HEALTH,  
CALCUTTA.

*Technical Staff.*

*Govt. of India Ministry of Health.*

1. Director . . . . . Dr. K. V. Krishnan.
2. Professor of Epidemiology . . . Dr. S. C. Seal.
3. Professor of Biochemistry and Nutrition Dr. K. Rajagopal (Offg.).
4. Professor of Maternity & Child Welfare Dr. (Mrs.) M. Sen.
5. Professor of Physiological & Industrial Hygiene. Dr. M. N. Rao.
6. Professor of Public Health Administration Dr. K. S. Viswanathan.
7. Professor of Statistics . . . . Dr. C. Chandrasekaran.
8. Professor of Sanitary Engineering . Mr. F. K. Erickson.
9. Associate Professor of Microbiology . Dr. M. N. Lahiri.
10. Associate Professor of Environmental Sanitation. Mr. N. Mazumdar.
11. Associate Professor of Biochemistry & Nutrition. Dr. A. R. Sundararajan.
12. Associate Professor of Epidemiology . Dr. L. M. Bhattacharyya.
13. Associate Professor of Social Medicine . Dr. K. C. Patnaik.
14. Associate Professor in Paediatrics . Dr. N. L. Sharma.



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# ALL INDIA INSTITUTE OF HYGIENE AND PUBLIC HEALTH, CALCUTTA.

## REVIEW OF PROGRESS AND DEVELOPMENT.

Consistent with progress made during past years, the All India Institute of Hygiene and Public Health has taken long strides towards the goal of providing a high standard of training for public health workers in India and the neighbouring countries. The Urban Health Centre building at Chetla has been completed and was formally opened by the Union Minister for Health ; the Centre has started functioning bringing specialised service of a high standard to the residents of Chetla. In Singur, a very modern hostel building has been completed and it can house 90 students. Two Sub-centres at Nasibpur and Paltagarh for intensive Maternal and Child Health work have also gone into operation. Student strength shot up to 276 as against 180 in the previous year, and the number of courses offered rose to seventeen. Institute staff have been in demand for service both within the country and on the international scene. More members of the staff have been sent abroad for training and others have returned after specialisation. In the field of research the Institute has maintained the normal tempo ; some old projects have been continued and new ones taken up. Thus during the year 1955-56 the Institute has recorded all round progress.

### *Administration*

Dr. K. V. Krishnan continued as the Director of the Institute for the entire period. He was on leave from February, 1956.

### *Staff*

Gazetted staff strength totalled 33 and the non-gazetted teaching staff rose to 26. Detailed staff list is presented in Appendix II.

### *New Appointments*

Through promotion and direct recruitment the following took charge of the appointments mentioned :

Mr. S. Subba Rao	.	.	.	.	Assistant Professor of Sanitary Engineering.
Mr. G. Karmakar	.	.	.	.	Assistant Professor of Biophysics.
Mr. G. R. Amritmahal	.	.	.	.	Assistant Professor of Health Education.
Dr. A. L. Saha	.	.	.	.	Assistant Professor of Epidemiology.
Dr. B. B. Chatterjee	.	.	.	.	Assistant Professor of Industrial Hygiene.
Mr. A. V. Rao	.	.	.	.	Assistant Engineer, Orientation Training Centre, Singur.
Mr. N. Majumder	.	.	.	.	Professor of Sanitary Engineering.
Dr. T. R. Bhaskaran	.	.	.	.	Associate Professor of Environmental Sanitation.
Mr. M. A. Sampathkumaran	.	.	.	.	Assistant Professor of Sanitary Engineering.



### *Higher Studies*

Dr. (Miss) N. J. Sethna returned after an observation tour in the United States of America on a T.C.M. Fellowship for six months from 27th February 1955. Mr. G. Ekambaram returned after an year's study in the United Kingdom, obtaining the D.P.H. (E.) from the University of Durham.

Dr. K. Bagchi, Assistant Professor of Nutrition and Dietetics left for the United Kingdom on a Government of India Scholarship to do research in the Human Nutrition Unit at the London School of Hygiene. Mr. K. K. Mathen returned to the John Hopkins School of Hygiene and Public Health, Baltimore to complete his studies for the doctoral degree. Mr. N. Majumder was deputed to the Delhi Joint Water and Sewage Board for practical training.

### *Deputations*

Dr. K. V. Krishnan was deputed by the Government of India to serve as a delegate in the Health Mission that visited the Peoples Republic of China. Dr. (Mrs.) Muktha Sen visited the U.S.S.R. as a member of the Medical Experts Delegation from India at the invitation of the U.S.S.R. Government. Dr. K. S. Viswanathan was appointed a member of the Indian Delegation to study the health problems of Cambodia and to suggest improvements and was away for three weeks. Dr. C. Chandrasekaran served as a discussion leader in the United Nations Seminar on population in Asia and the Far East held in Bandung, Indonesia. Professor F. K. Erickson participated in a seminar on Environmental Sanitation, sponsored by the W.H.O. and held in Kandy, Ceylon.

### *International staff*

During the year under report the W.H.O. continued its assistance in providing visiting teaching staff to work in the Institute. Dr. M. R. Fields. Visiting Professor of Health Education and Miss Ilfa M. Lovedee, Instructor in Midwifery Nursing were assigned during the current year.

Miss Alison G. Cathie, Paediatric Nurse, left the Institute at the termination of her contract. Miss Josephine Walker Instructor in Midwifery Nursing relinquished charge of her post. Dr. D. B. Jelliffe, Miss Margaret Mackenzie and Mr. E. C. Garraty continued in their posts for the entire year.

### *Retirements*

Dr. G. Sankaran, Professor of Biochemistry and Nutrition, who had been on loan to Hidusthan Antibiotics retired from service. Dr. K. Rajagopal, Professor of Biochemistry and Nutrition resigned on January 1, 1956. Mr. F. K. Erickson, Professor of Sanitary Engineering, lent by the U.S. Public Health Service, returned to the United States at the expiry of his contract.

### *Teaching*

Teaching load of the faculty members continues unabated. More courses have been added, student strength has risen steeply and more

and more outside agencies are requesting specialised teaching from the members of the Institute staff. Seventeen courses (Appendix III) were offered during the year with a total student enrolment of 246. A detailed breakdown of students enrolled in the different courses is presented in Appendix IV & V. Examination results by different courses are presented in Appendix VI.

Of special mention is the M.C.H. seminar that was conducted early in 1956. The objective of this seminar, sponsored jointly by the Government of India and the W.H.O., was to bring back administrative personnel in the field to an academic atmosphere so that mutually advantageous discussions could take place between the participants and the Faculty of the Institute. Senior M.C.H. officials from 11 States, and one worker from the Indian Red Cross Organisation participated in this four week seminar.

#### *Urban Health Centre, Chetla*

The very elegant building of the Urban Health Centre was opened by the Union Minister for Health, Rajkumari Amrit Kaur, on December 30, 1955. Maternal and Child Health Clinics were the first to start functioning with one clinic a week, which by the end of the year was augmented to three. Tuberculosis and Venereal Diseases Clinics started functioning later in the year.

A demographic survey of one of the census circles of the area was completed; as soon as requisite staff is available the survey will be extended to the entire Chetla area. At the suggestion of the Union Health Minister, a survey of the health status of the bustee population was conducted; one bustee was surveyed with interesting results. A preliminary survey has been made with a view to developing a cooperative medical care programme amongst the industrial workers in small sized industries in the Chetla area. With a view to providing intensive environmental sanitation service, an area has been marked and detailed proposals have been submitted to the Technical Advisory Committee.

Among the very first things to be done in the Urban Health Centre area was the small pox vaccination and the cholera inoculation drives. The Institute Mobile Cinema was utilised and with the help of Corporation Staff considerable number of people were immunized.

#### *Rural Health Unit and Training Centre, Singur*

The very fine hostel building with a lounge, a canteen and recreational facilities was opened by Rajkumari Amrit Kaur on December 31, 1955. The provision of such a building in the rural areas is certainly a great boon to students who come to the Institute for training. Years of experience of the sufferings of students in tents has led to the conclusion that such a building was definitely required. In future, by phasing the time of training for the different courses in the Singur area, it is expected that all students will stay in the hostel.

As a part of the expansion programme of the Health Centre, the Paltagarh Sub-centre was opened in March 1956; the Nasibpur

Sub-centre went into operation in May, 1956. These two Sub-centres are primarily meant for intensive maternal and child health work.

### *Services*

Members of the Institute Staff were called upon in advisory capacities by the Central and some of the State Governments. Details of the services rendered by members of the different sectional staff have been incorporated in the respective sectional reports:

### *Health Survey of Community Development Project*

In the last report mention was made of the assignment given to the Institute to conduct rapid health surveys in selected Community Development Blocks. Staff recruited were trained in survey methods in the Singur area and were put on a test survey in the Saktigarh Block in West Bengal. Subsequently the survey party was shifted to Madhya Pradesh and after completing work in the Dabra Block are now located in Rajasthan.

### *Research*

Research work has kept pace with other developments in the Institute. Progress in research is in all fields of public health; a few of the more important ones are described below.

### *Environmental Sanitation*

In the field of environmental sanitation, the three Indian Council of Medical Research schemes are being worked on. As a result of knowledge already available in the Industrial Wastes Disposal and Water Pollution Research an experimental pilot plant for treatment of sugar wastes has been set up in the Bhita Sugar Factory, Bihar. Similarly, the Bengal Distillery, Konnagar, West Bengal, has a pilot plant for treatment of distillery wastes. Studies on the presence and viability of tubercle organisms in sanatoria sewage are in progress. Another study relates to the efficacy of a septic tank latrine in rural areas.

### *Cholera*

Investigations on the cholera vibrio are being continued. Artificial infection of fish and the study of the vibrios excreted by them lent further support to the surmise that *V. cholerae* might actually be undergoing some change in the guts of fish. Another investigation revealed that cultures which are negative after 24 hours showed good growth of vibrios after 48 or 72 hours incubation. Phage typing of *V. cholerae* is being attempted.

### *Plague*

An investigation carried out earlier with laboratory-bred white mice suggested that plague infection might persist in chronic form in the rat population causing at times bacteraemia in some of them. This

would infect the fleas and thus bring about a simmering or open epizootic. The work was extended to commensal rats from local fields with corroborating results.

### *Diphtheria*

A study of the incidence of diphtheria in Calcutta indicated that incidence and death rates have doubled since 1952. Prevalence was most marked in July to October, and highest fatality rate in the age group under two years.

### *National Tuberculosis Survey*

The Institute is one of the units in the National Tuberculosis Survey. Using the Mass Chest Radiographic Unit, 8,216 persons in 17 blocks in Calcutta have been examined radiologically and medically. Bacteriological examination of sputum of cases with positive X-rays is also done.

### *Occupational Health*

Health status of sweepers and scavengers employed by the Corporation of Calcutta has been surveyed. Six hundred workers have been examined so far.

### *Child Health*

Utilising data collected some time back a maturity-meter for Indian babies was devised. The instrument serves as a ready reckoner of birth weight for infants of both sexes of varying lengths.

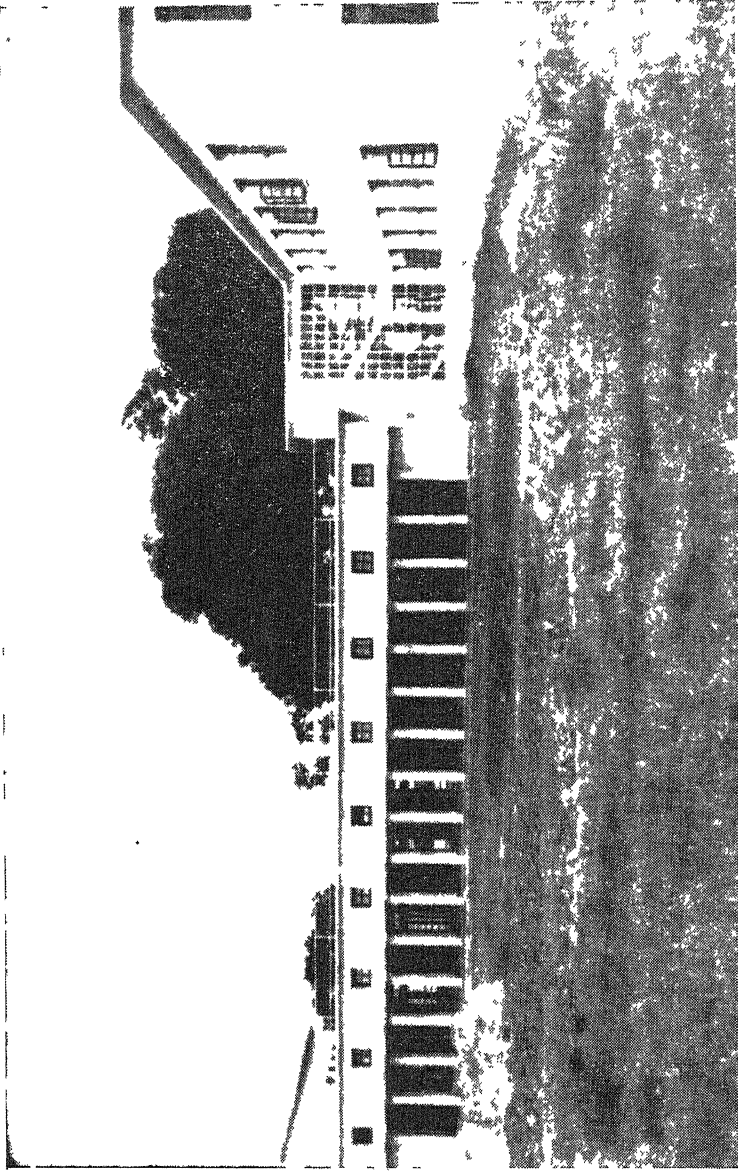
An investigation into childhood cirrhosis was taken up; causation, clinical features and liver changes are being observed. The study of culture patterns in the production of protein malnutrition is one aspect of the total investigation. The extent of use of supplementary foods in the first six months of life in the lower socio-economic groups in Calcutta and Singur is also being studied. A survey of the nutritional status of school children in the Urban Health Centre area revealed marked Vitamin A and Vitamin C deficiencies.

### *Family Planning*

A project in family planning with emphasis on educating the people has been initiated. It aims at testing out and evolving methods of educating rural people in simple family planning methods. To assess the anti-fertility effects of meta-xylohydroquinone and to study its mode of action in humans an elaborate investigation is in progress. Hundred women volunteers without any damage to liver or kidney or both are administered 300-400 mg. of the drug on the sixteenth and twenty first day of the menstrual cycle. Biochemical and histopathological tests are carried out on these women to observe any possible effects. More time is required to arrive at a definite conclusion.

*Alumni Association*

The annual session of the Alumni Association was held in September 1955. A scientific session, symposium and an exhibition constituted the programme. Health of the Mother and the Child was the central theme and the different sections of the Institute contributed scientific papers and exhibit material. Family Planning was the subject of the symposium and a number of distinguished speakers from outside the Institute participated.



SINGUR HEALTH CENTRE STUDENT'S HOSTEL.



PART II  
SECTION I  
REPORT ON THE SECTION OF PUBLIC HEALTH  
ADMINISTRATION.

DR. K. S. VISWANATHAN.

*Staff*

Dr. K. S. Viswanathan continued as the Professor of Public Health Administration during the year. The two Demonstrators' posts which were vacant were filled in by Drs. A. Rahman and P. K. Mukherji on 4th November 1955 and 9th November 1955 respectively. Consequent on the appointment in April 1955 of Dr P. C. Sen as the Assistant Professor of Public Health Administration in-charge of the Rural Health Unit and Training Centre, Singur, Dr. K. C. Patnaik, the Associate Professor of Social Medicine who was looking after Singur in addition to his own duties, was able to devote his whole-time attention to his own field.

The Chetla Health Centre was opened on 30th December 1955 and the Professor of Public Health Administration was in-charge of giving guidance and over-all co-ordination of the work of the Centre as the Chairman of the Management Committee. As the sub-section of Health Education was handicapped for want of personnel to work in the Chetla area, the Demonstrators of the Section Drs. A. Rahman and P. K. Mukherjee were detailed for duty there for three months (January, February and March 1956) and 2 months (April and May 1956) respectively. A Social Worker, Miss Tapati Dam was appointed on 13th February 1956 in Chetla to help Miss K. K. Radhalaxmi, the Assistant Professor of Medical Social Work, in organising the medico-social activities in the Health Centre area.

*Teaching*

Training Courses, both theoretical and practical, were offered to D.P.H., L.P.H. and D.M.C.W. students. They were given 54 hours of lectures and seminars and about 150 hours of practicals and field demonstrations by the Section, which included participative work by the students in the solution of both rural and urban public health problems. With the addition of new courses the teaching load became heavier. A summary of the different courses, and the hours taken by the section is appended below.

	Theoretical	Practical and Demonstration
1. D.P.H., L.P.H. & D.M.C.W. . . . .	54	150
2. D.I.H. . . . .	40	20
3. D.N. . . . .	40	20
4. M.E. (P.H.) . . . . .	23	15
5. Orientation course in Rural Water Supply & Sanitation . .	11	—
6. C.M.C.W. . . . .	8	—
7. C.P.H.N. . . . .	20	—
8. D.T.M. & H. . . . .	6	6
9. L.T.M. . . . .	6	—
10. Diploma in Social Work course . . . . .	12	—
11. Orientation course for the Community Project Workers (4 batches).	—	—



### *Singur Health Centre*

The Professor of Public Health Administration was in overall administrative charge of the Singur Health Centre during the year.

### *Other Activities*

Dr. K. S. Viswanathan was deputed to Cambodia on 12th December 1955 for a period of three weeks as a Member of an Indian Delegation which visited Cambodia to study the problems of the country and to suggest improvements.

### *Publications*

- (1) Urban Health Centre and Practice Field in a Public Health Training Programme by K. S. Viswanathan and A. K. Banerjee.
- (2) Social Security for Women and Children by A. K. Banerjee.

### *Enclosures*

- (1) Report of the Officer-in-Charge of Administration, Singur Health Centre.
- (2) Report of the activities of the M.C.H. Section in Singur.
- (3) Report of the activities of the Health Education Section.

### SINGUR HEALTH CENTRE

### *Introduction*

In 1939, the Rockefeller Foundation, which has contributed so much to the initiation of different public health programmes throughout the world, collaborated with the then Government of Bengal in establishing a Health Centre at Singur. The area consisted administratively of four unions with a population of about 40,000. The sponsors' purpose was to set up a model health service there, mainly through preventive work. The help from the Rockefeller Foundation was on a sliding scale, which by 1944 was entirely withdrawn.

In that year, the Government of India through the All India Institute of Hygiene and Public Health, Calcutta began to take part in the scheme. They reorganised it as a practice field, where public health workers could be brought to be trained to put their theory into practice. They had three main objectives in view namely: (i) to continue to render model health services in the area (ii) to provide facilities for field training and (iii) to conduct researches on various rural health problems. Of these three objectives, first was the responsibility of the State Government, the second and third were those of Government of India.

The population of the area has increased considerably since 1939 and is now about 73,000. There are still four unions but they have been re-organised. The area covers about 33 sq. miles and consists of 68 villages with about 14,000 families.

4 The expansion scheme of Singur Health Centre has been drawn up in collaboration with W.H.O., U.N.I.C.E.F., Government of India and Government of West Bengal. The area of operation will consist of the whole Singur Thana having a population of about 1 lac (100,000) in an area of 57 sq. miles. In this new scheme, equal stress will be given on preventive and curative medicine by providing one 50-bedded Thana Health Centre, two 12-bedded Union Health Centres, three 10-bedded Union Health Centres and two maternity Sub-centres. The Thana Health Centre at Singur, Union Health Centres at Bora and Balarambati, and two maternity Sub-centres at Paltagarh and Nasibpur have started functioning. The buildings of Nasibpur Union Health Centre have been handed over and maternity and child welfare work to begin with has commenced. The buildings of Gopalnagore and Anandnagore Union Health Centres have not yet been completed. The hostel for accommodating ninety students has been completed and formally opened by Hon'ble Rajkumari Amrit Kaur on 31st December, 1955. The quarters for the staff are all complete. The Administrative Block of Orientation Training Centre has been completed and is functioning.

#### *Administration*

The Professor of Public Health Administration of the All India Institute of Hygiene and Public Health, Calcutta is responsible for the overall administration of the area. An Assistant Professor of Public Health Administration is the Officer-in-Charge of Administration. The different sections of the Institute like Sanitary Engineering, Maternity and Child Welfare, Microbiology, Nutrition, Epidemiology post their representatives at Singur Health Centre to discharge their specific responsibilities in carrying out field research and in upgrading the quality of services provided at the Centre.

#### PERSONNEL

##### Singur Head Quarters

Officer-in-Charge of Administration . . . . .	Dr. P. C. Sen.
Officer-in-Charge, Training . . . . .	Dr. R. N. Basu.
Officer-in-Charge of Maternity & Child Welfare . . . . .	Dr. (Miss) N. J. Sethna.
Officer-in-Charge, Public Health Laboratory . . . . .	Dr. N. C. Talapatra.
Lady Medical Officer . . . . .	Dr. (Mrs.) U. Chakraborty.
Laboratory Assistant (Microbiology) . . . . .	Sri N. C. Ghosh.
Senior Laboratory Technician . . . . .	Sri D. B. Thapa.
Chief Sanitary Inspector . . . . .	Sri T. Bhowmik.
Head Clerk . . . . .	Md. Jonab Ali.
Second Clerk . . . . .	Sri N. N. Sen Gupta
Typist-Clerk . . . . .	Sri B. N. Santra.
Cine-Artist . . . . .	Sri R. Purakayastha.

*Orientation Training Course Staff—*

Medical Officer-in-Charge . . . . .	Dr. G. Sen.
Asstt Engineer (P H.) . . . . .	Sri A. V. Rao.
Lady Medical Officer . . . . .	Dr (Miss) P. Hora (re- signed on 2-2-56).
Public Health Nurse . . . . .	Smt I Ghosh
Senior Sanitary Inspector . . . . .	Sri D N. Su1
Stenographer . . . . .	Sri H. Bagchi.
Caretaker . . . . .	Sri J M Ghosh

*(1) Singur-Balarambati Unit—*

Rural Medical Officer of Health . . . . .	Dr N P Sinha
Sanitary Inspector . . . . .	Sri R P Chatterjee.
Lady Health Visitors . . . . .	{ Smt B P. Roy Smt P Sarkar.
Midwives . . . . .	{ Smt S Chakrabarty. Smt R Roy (Left on 30th May 1956).

*(2) Paltargah Sub-centre—*

Lady Health Visitor . . . . .	Smt R Choudhury.
Midwife . . . . .	Smt P B Kar.

*(3) Bora-Begampur Unit—*

Rural Medical Officer of Health . . . . .	Dr S R Mukherjee.
Sanitary Inspector . . . . .	Sri M. N. Sen Gupta.
Lady Health Visitor . . . . .	Smt S Sen (on leave from 1st May '56 ultimately resigned)
Midwives . . . . .	{ Smt H. P. Ghosh. Smt. A. Roy.

*(4) Nasibpur Union Health Centre—*

Lady Medical Officer . . . . .	Dr. (Miss) P. Sinha.
Public Health Nurse . . . . .	Smt. V Subhadra.
Lady Health Visitor . . . . .	Smt. A. Sen.

*Nasibpur Sub-centre—*

Lady Health Visitor . . . . .	Smt N Sarkar.
Midwife . . . . .	Smt. S. K. Dev.

*(6) Anandnagar Union Health Centre . . . . .*

No staff has been selected  
so far.



VILLAGE HEALTH COMMITTEE'S MEMBER-IN CHARGE OF SANI-  
TATION EXPLAINING THE EFFICACY OF TUBE WELL WATER.





A VIEW OF THE MONTHLY MEETING OF THE VILLAGE HEALTH COMMITTEE.



## Services

Throughout the area, starting from the village level, there are voluntary organisations and the people are reached through these voluntary bodies. Each village health committee consisting of five members, who are elected by the villagers themselves. These committees are organised by the Rural Medical Officer of Health. Each committee elects one of its members as the Chairman and the Sanitary Inspector acts as the Secretary. Each member is allotted separate public health responsibilities. Thus one member is put in charge of the improvement of vital statistics, another on the control of communicable diseases, the third for environmental sanitation, the fourth on anti-malaria work and the fifth on maternity and child welfare work. The committee usually meets once a month.

### A. Voluntary Organisation

Organisation and utilisation of self-help agencies for improving the services in the area is one of the most important functions of the Centre. The following is the list of such self-help agencies:—

- (a) Village health committee,
- (b) Local Medical Practitioners' Association,
- (c) Parent-Teachers' Association,
- (d) Multi-purpose Volunteers.

258 village health committee meetings were held during the period.

### B. Improvement of collection of Vital Statistics

The Chowkidar (village watchman) is the local collector of vital events in the villages, such as births and deaths, but he is usually illiterate and hence the records are incomplete and inaccurate. The matter is safeguarded, however, by the literate village health committee member-in-charge of vital statistics, who not only assists the chowkidar but also himself keeps the records. The member-in-charge is supplied with 'Hathchittas', one for births and another for deaths similar to those of the chowkidar. The chowkidar reports to the Union Sanitary Inspector twice a month. The Sanitary Inspector collects all the Hathchittas from the village health committee members at least one day before the chowkidar reports to him. Thus he can always check the work of the chowkidar in the matter of collection of vital events. The record of vital occurrences is further supplemented by the information received from local medical practitioners and health centre staff. By this procedure greater accuracy in registration of vital events is obtained without extra cost. The main data for the calendar year 1955 are given below:

Population . . . . .	73,413
Total No. of births . . . . .	2,638
Birth rate per mille of pop. . . . .	35.93
Total No. of deaths . . . . .	628
6 Health/59	2

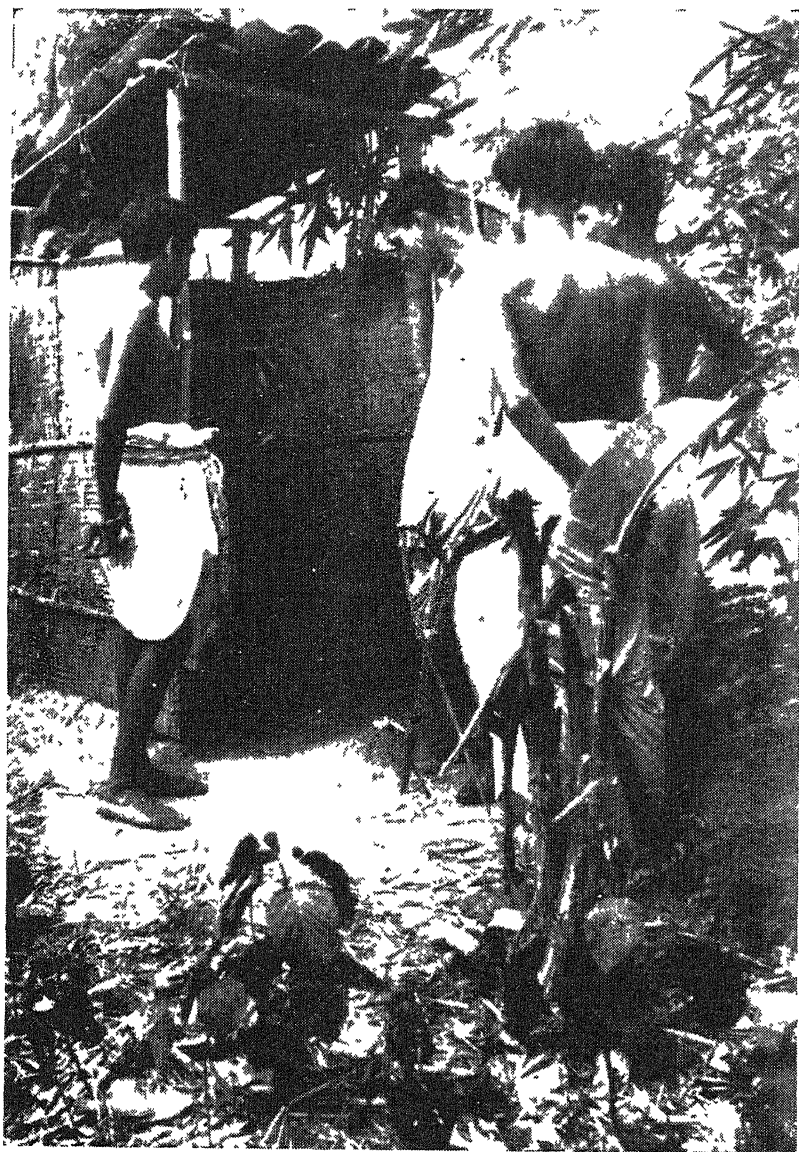


Death rate per mille of pop. . . . .	28.5
Total No. of infant deaths . . . . .	221
Infant mortality rate per 1,000 births . . . . .	83.77
Total No. of maternal deaths . . . . .	6
Maternal mortality rate per 1,000 births . . . . .	2.3
Total No. of deaths due to Malaria . . . . .	2
Malaria mortality rate per 100,000 . . . . .	2.72
Total No. of deaths due to tuberculosis . . . . .	11
Tuberculosis mortality rate per 100,000 . . . . .	14.98
Total No. of deaths due to cholera . . . . .	39
Cholera mortality rate per 100,000 . . . . .	53.12
Total No. of deaths due to Typhoid . . . . .	4
Typhoid mortality rate per 100,000 . . . . .	5.44
Total No. of deaths due to Diarrhoea and Dysentery . . . . .	38
Diarrhoea and Dysentery mortality rate per 100,000 . . . . .	51.76

### C. Improvement of Environmental Sanitation

The Sanitary Engineering Section of the Institute has posted at Singur, one Assistant Engineer, one Public Health Inspector, one Head Fitter Mistry, one Workshop Assistant and under them two fitter Mistries, one for each unit. They are responsible for improvement of sanitation in the area. The programme includes the provision of safe water supply through deep tube wells, sanitary disposal of nightsoil through dug-well latrines and household refuse disposal through manure pits. A new programme of providing free tube wells and dug-well latrines in the schools during the field training of Orientation Course and other students has been introduced from this year. There are more than 400 tubewells in the area, that is, 1 tubewell for 150 to 200 persons and 4000 latrines. With such a large number of tubewells it is obviously impossible for the fitter mistry to know which one is out of order and there is therefore a system of quick reporting with the help of the village health committee member-in-charge of environmental sanitation. The member is provided with tubewell reporting cards. When a tubewell is out of order he fills up that card, mentioning the number and location, and posts it in the letter box in front of the sanitary inspector's house or in any other vantage point in the union. The fitter mistry every day goes round and collects the cards and repairs the defective tubewells. All tubewells are repaired within 48 hours of notification.

In re-sinking of G.I. pipe tubewells, the local people contributed for reconditioning of filter and labour charges, whereas the Health Centre provided machineries, extra material and technical supervision. In the case of black pipe tubewells, the local people contributed labour



APPRECIATION OF A DUG WELL LATRINE COMPLETE WITH SUPER-  
STRUCTURE BY LOCAL PEOPLE IN A VILLAGE.



charges only and the Health Centre provided all other materials including G.I. pipes, filters, etc., supplied under special grant of West Bengal Government.

Bricks and sands were supplied by local people and cement and labour charges were borne by the Health Centre ;

(b) *Food Control*.—The work consisted of inspection of grocery and sweetmeat shop, advising on general sanitation and cleanliness.

No. of grocery shop inspected . . . 688

No. of sweetmeat shop inspected . . . 394

Representation has been made to proper authority to declare the health centre sanitary inspectors as authorised food inspectors in connection with the New Food Control Act.

(c) *Disposal of sewage and refuse*.

(i) Construction of squatting plates . . . 220

(ii) Construction of water seals . . . 267

(iii) No. of squatting plates supplied . . . 75

Within area . . . 45

Outside area . . . 30

The village purchased the squatting plate with water seal for Rs. 7/8/- each. The latrines were constructed under the supervision of Health Centre Staff. The villagers bore the expenditure of digging the well and the construction of superstructure.

(iv) No. of manure pits constructed . . . 400

#### D. *Control of Communicable Disease*

One of the important functions of the Rural Medical Officer of Health is the control of communicable diseases particularly cholera, smallpox, and enteric fever. The investigation is done by him, on receipt of the information of the occurrence of a case or death from a communicable disease. The sanitary inspector carries out disinfection and immunisation in the community. Whenever a communicable disease like cholera, typhoid, smallpox breaks out in the area, the member of the Committee in charge, at once informs the R.M.O.H. of his area. This enables the latter to take immediate measures for preventing the spread of the disease. The village committee member also persuades the villagers to cooperate with the health centre staff in accepting the services given by them.

The main data for the year 1955 are as follows:

(a) *Cholera*

Name of U.B.	Attacks	Deaths	No. of villages affected	No. of A.C. inoculation	Disinfection				
					House	Tank	Dug well	Tuber- ing on fly breeding places	DDT spray-
Singur . . .	14	5	4	2,421	15	10	20	3	—
Balarambati . .	6	3	2	1,454	6	—	6	—	—
Bora . . .	14	8	4	9,876	20	3	9	—	—
Begumpur . .	61	23	9	6,634	86	32	39	5	312
Total . . .	95	39	19	20,385	127	45	78	8	312

During the period under consideration, cholera broke out in epidemic form in Calcutta and its suburbs. As Singur is very near to Calcutta and is situated between Shooraphuli, an industrial area and Tarnal esvar, a permanent religious place, which is visited every month by a large numbers of pilgrims, it is always exposed to the risk of importation of cholera infection from outside. But this has always been put under control by prompt measures.

(b) *Smallpox* --There was no case of smallpox in the area.

No. of primary vaccination . . . . . 1,992

No. of the vaccination . . . . . 16,679

(c) *Enteric fever*:

Name of U.P.	Attacks	Deaths	T.A.B. inoculation		Disinfection		
			1st dose	2nd dose	House	Tank	Doba
Singur . . .	7	—	129	98	6	1	6
Balarambati . .	18	—	215	165	12	4	12
Bora . . .		2	158	123	3	3	3
Begumpur . .	11	2	215	177	8	—	12
Total . . .	39	4	7	563	29	8	33

There was a decrease in the incidence of typhoid and other entire group of fevers in the year under review. Local medical practitioners who usually attended these cases were advised to send samples of clinical materials like blood, etc., for confirmation of the clinical diagnosis in the Singur Public Health Laboratory.

(d) *Anti-Malaria Work*.—Anti-malaria operations by D.D.T. indoor residual spray was started from 1st June and was continued upto 31st December 1955. The D.D.T. insecticide (wetable powder containing 75% D.D.T.) and the spraying equipments were supplied by the Malaria Officer, National Malaria Control Scheme, Hooghly. The rate of application of D.D.T. was 50 mg. per sq. ft. in the beginning and it was so continued upto July 1955. Subsequently on the instruction of Malaria Medical Officer, Hooghly, it was given at the rate of 100 mg. per sq. ft. in the first round and 50 mg. per sq. ft. in the second round. All the 68 villages of the area have been sprayed twice. A consolidated statement of the work is given below:

Months	No. of houses sprayed	No. of bedrooms sprayed	No. of Kitchen prayed	No. of cattle shed Sprayed	Total area in sq. ft. sprayed	D.D.T. used in lb.	Man-days spent
<i>1st Round</i>							
June . .	3,561	9,957	310	1,183	57,60,860	889	405
July . .	3,786	11,437	349	1,524	70,81,328	1,094	447
August . .	3,375	10,707	497	1,433	66,97,650	1,006	476
September .	387	1,355	12	176	7,48,280	224	56
<b>TOTAL .</b>	<b>11,109</b>	<b>33,456</b>	<b>1,168</b>	<b>4,316</b>	<b>20,288,118</b>	<b>3,213</b>	<b>1,384</b>
<i>2nd Round—</i>							
September .	2,963	10,074	248	1,594	63,97,230	1,006	398
October .	3,718	11,310	56	1,805	70,21,010	1,077	386
November .	3,278	8,653	29	1,140	54,15,030	836	365
December .	1,210	2,643	15	147	17,78,820	274	140
<b>TOTAL .</b>	<b>11,169</b>	<b>32,680</b>	<b>348</b>	<b>4,686</b>	<b>20,612,090</b>	<b>3,193</b>	<b>1,289</b>
<b>GRAND TOTAL .</b>	<b>22,278</b>	<b>66,136</b>	<b>1,516</b>	<b>9,002</b>	<b>40,900,208</b>	<b>6,406</b>	<b>2,673</b>

There were 8 (including two mates) anti-malaria workers from January to December and there were 11 additional labourers from June to November.

No. of houses sprayed per man-day .	8.3
No. of rooms (including kitchen and cattle shed) sprayed per man-day .	28.6
Area sprayed per man-day . . .	15301 sq. ft.

The services of village volunteers were utilised in this work. The campaign was started after educating the public by meetings, group talks, distribution of leaflets, magic lantern and motion picture shows. The result of anti-malaria operation is dramatic, as is evidenced by the sharp decrease in morbidity and mortality rates.

(c) *Maternity & Child Welfare Services*.—The services have gained considerable importance and popularity. The staff available for the maternity and child welfare services are two Lady Doctors, two Public Health Nurses, six Lady Health Visitors, six Midwives and two trained *Dais*. The services include ante-natal, intra-natal and post-natal care of the mothers, care of toddler and infants are given in the home and in the clinics. Institutional delivery service is given in the four bedded maternity home at Singur and domiciliary midwifery service which covers about one-third of the population by midwives and trained *dais*. Rest of the area is served by *dais* most of whom have been trained in the Health Centre and settled down for practising in the area. In addition to four main clinics in the four unions, there are sub-clinics—two in Singur and two in Degunpur. The sub-centre for improved maternity and child welfare work at Pallagarh has started functioning on 2nd January 1956 and that of Nasibpur on 9th March 1956.

The different activities are represented in the following tables:

TABLE I

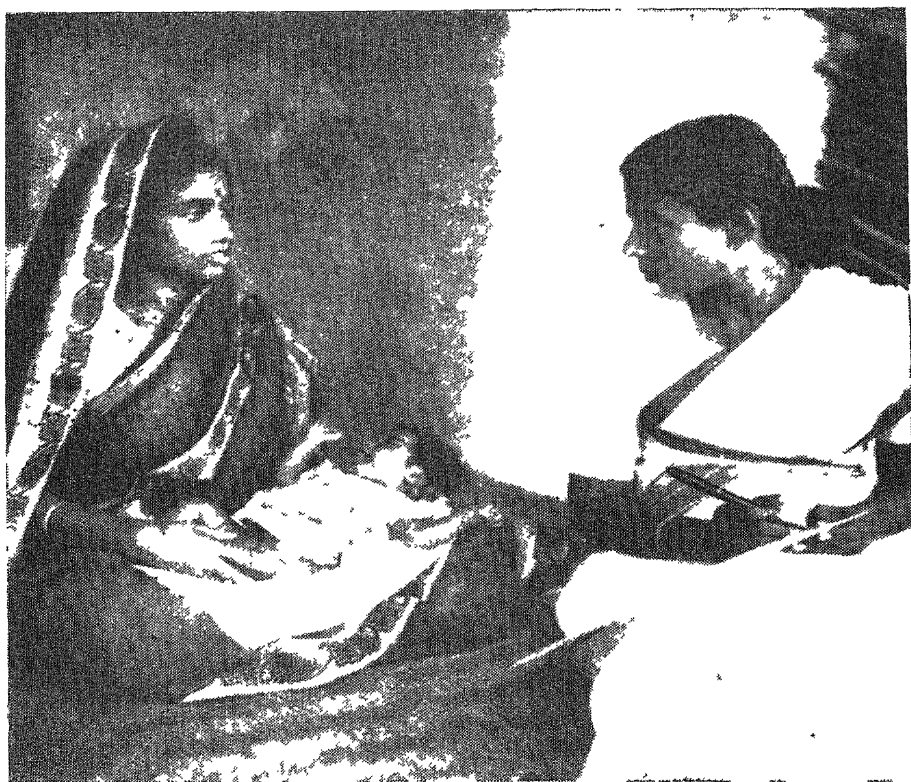
*Home visits.—*

Pre-natal visit . . . . .	5,057
Post-natal visit . . . . .	6,876
Infant visit . . . . .	8,601
Special visit . . . . .	300
Toddler visit . . . . .	1,289

TABLE II

*Clinic visits.—*

(i) Total No. of clinics held . . . . .	473
(ii) Total attendance in all the clinics . . . . .	15,504
Pre-natal visit . . . . .	2,834



A LADY HEALTH VISITOR PAYING HOME VISIT.







A MOTHER BEING TRANSFERRED TO OTHER HOSPITAL IN THE  
AMBULANCE OF THE HEALTH CENTRE.



TABLE II—(contd.)

Postnatal visit . . . . .	2,654
Infant visit . . . . .	3,530
Toddler visit . . . . .	4,958
Gynaecological & Medical care . . . . .	1,528

TABLE III

*Activities of Maternity Home—*

(i) Total No. of admission during the year . . . . .	208
(ii) Total No. of deliveries :—	
(a) Normal confinements . . . . .	161
(b) Abnormal confinements . . . . .	6
(iii) Total No. of admission for false pain and other complications . . . . .	25
(iv) Total No. treated for anaemia . . . . .	6
(v) Total No. of cases transferred to other Hospital . . . . .	10

*Domiciliary Midwifery.—*

No. of cases conducted . . . . .	324
By midwife . . . . .	139
By staff dais . . . . .	185

(f) *School Health Programme.*—The School Health Programme is carried out by the Rural Medical Officer of Health with the help of the Sanitary Inspector in collaboration with the trained Hygiene Teacher. The hygiene trained teachers carry out some of the functions of a public health nurse. The Lady Doctor is responsible for Girl's School. She is assisted by the area lady health visitor. The general programme of school health work which was started in 1944 in collaboration with Department of Education, Government of West Bengal was continued during the year. The allowance of teachers for school health work was reduced from rupees ten to rupees five per month after ten years, which has adversely affected the school health work to a great extent. School Health services include physical examination of new entrants, re-examination of referrals, detection and correction of defects, immunisation against small pox, cholera and enteric fever (contacts on the occurrence of a case), school sanitation, quarterly recording of height and weight and a series of health education programme with the help of trained hygiene teachers is done in three stages. Minor ailments are treated by the teachers in the school with the aid of the first aid box supplied for every school by the Health Unit. Other cases are sent to school health clinics conducted by Rural Medical Officer of Health. Such cases as tonsillectomy, extraction of tooth, etc., which require

treatment in specialized hospitals are sent to Calcutta Medical College Hospital or Calcutta Dental College Hospital. The details of work done are given below:

(1) Total No. of schools in the area	40
(2) No. of schools within school health programme	28
(3) No. of trained hygiene teachers	46
(4) Routine examination of students by the Rural Medical Officer of Health	1,860
No. of defectives detected	385
(a) Enlarged and septic tonsils	111
(b) Defective vision	41
(c) Caries tooth	60
(d) Anaemia and Malnutrition	112
(e) Skin disease	40
(f) Otitis media	7
(g) Others	14
(5) No. of minor defects corrected in the school by trained hygiene teachers	1,173
(a) Fever	114
(b) Minor gastro-intestinal trouble	451
(c) Minor injuries	354
(d) Eye trouble	52
(e) Skin disease	90
(f) Common cold	112
(6) No. of clinics conducted by the Rural Medical Officer of Health	160
No. of students attending the clinic for the correction of intermediate defects	491
(a) Enlarged and septic tonsil	60
(b) Chronic ear discharge	2
(c) Nasal polyp	1
(d) Caries tooth	51
(e) Skin disease	30
(f) Eye trouble	38
(g) Malnutrition	59
(h) Fever	18
(i) Cough	45
(j) Chronic gastro-intestinal trouble	172
(k) Others	15
(7) No. of students referred to special Hospital for the correction of major defects.	128
(a) E. N. T. Department	57
(8) No. of students immunised against smallpox	3,908
No. of students immunised against cholera	4,605
No. of students immunised against typhoid	1,596



RURAL MEDICAL OFFICER OF HEALTH EXAMINING A PUPIL  
WITH THE ASSISTANCE OF A PUBLIC HEALTH NURSE,





A HYGIENE TRAINED TEACHER GIVING A HEALTH TALK WITH  
THE HELP OF A MODEL.



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(g) *Public Health Laboratory.*—The Public Health Laboratory is under charge of an officer of the rank of Assistant Professor of Microbiology. The Public Health Laboratory receives all sorts of specimens from local medical practitioners, Thana and Union Health Centres, Maternity & Child Welfare clinic, school health clinic and from different departments of the Institute, who carry out inquiries and investigations connected with microbiological problems in the field. The entire service is free of cost. The number of samples of clinical materials examined during the year under review, totalled 11,401 as compared with 10,558 during the period 1st June 1954 to 31st May, 1955.

### I. Service to general population

The materials examined were either sent by the local medical practitioners or for the purpose of collection of samples, the patients were advised to come to the laboratory. Details are given in sectional report.

### II. Service to Maternity and Child Welfare

The clinical materials under this heading were collected by the staff of the maternity and child welfare sections. The total No. of samples examined were 4,731.

Samples of stool	911
(23.16 per cent. positive for Hookworm, 3.29 per cent. positive for Ascaris, 18.44 per cent. positive for Giardia intestinalis).	
Samples of blood	for M. P. . . . . 524
	for D. C. . . . . 537
	for T.R.B.C. . . . . 446
	for T.W.B.C. . . . . 461
	for Hb per cent. . . . . 461
	for E.S.R. . . . . 2
	for Portion . . . . . 423
	for Colour index . . . . . 442
	for Kahn test . . . . . 470
	(2.34 per cent. positive).

### III. Service to School Health

The medical officer of the Singur Health Centre, sent clinical materials from local students to the laboratory for the examination of different clinical materials. The number of such examinations were 102 during this year.

No. of stool samples 23 (43.47 % positive for Hookworm  
26.52 % positive for Giardian intestinalis)

No. of blood samples 17

No. of urine samples 5

No. of sputum samples 2

No. of throat swab 1

(h) *Health Education*.—Health education programme is carried out through general participation by all the members of staff namely, the Rural Medical Officer of Health, the health visitors, the sanitary inspectors, etc. During their daily round in villages and in different clinics, the staff contacted the families in different phases of their lives and educated them to effect a better understanding of health and disease. The lending of International Experts has improved the different methods and approaches for carrying on health education. It has also made it possible to establish training programme in health education for different groups by co-ordinating the education programme in the health centre area. An elaborate health education programme suitable for the rural area is also under way in collaboration with the International Expert working in the Institute. The following are the details of health education work done during the year.

(i) *Cinema shows*.—Thirty-three cinema shows were arranged in different villages of the area and the total number of audience were 12,160. The films were borrowed from United States Information Service, Calcutta. The films dealt with Malaria, Hookworm, Tuberculosis, Clean water, health problems of India, etc.

(ii) *Demonstration with posters and charts*.—Twenty such demonstrations were carried out by sanitary inspectors in schools and village health committee offices. The subjects covered mostly were malaria control, school health, epidemic disease control and village sanitation.

(iii) *Magic lantern shows*.—The magic lantern shows arranged in the area numbered to 109 and the total number of audience in these shows were 600. The sanitary inspectors along with health visitor conducted the show covering various subjects like—maternity and child welfare, village sanitation, anti-cholera measures, etc.

(iv) *Group talks*.—1,525 group talks were given by the different staff members on various subjects of health and disease during their contact with villagers.

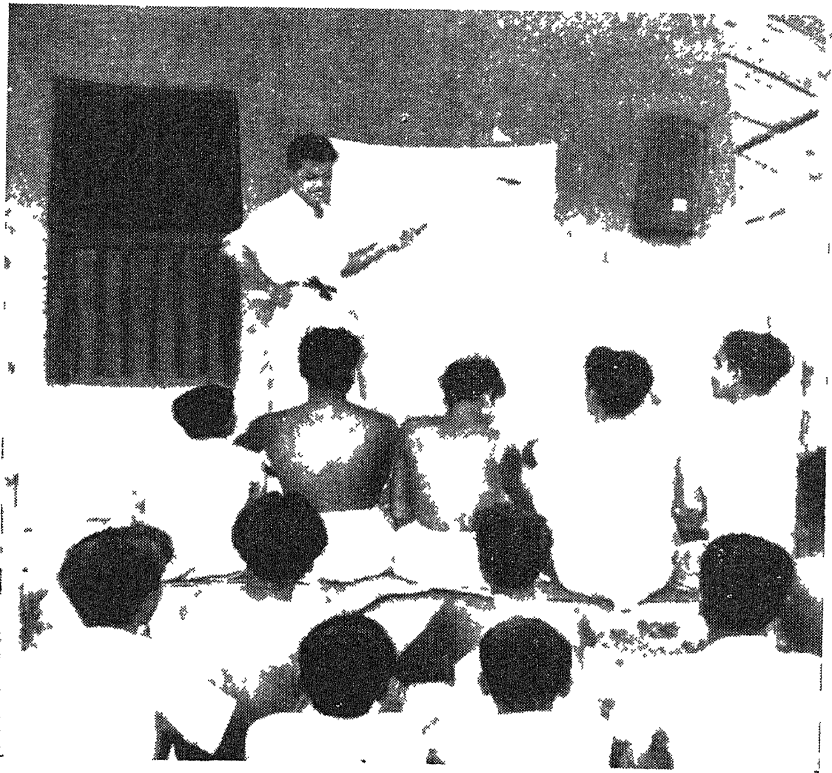
(v) 2,000 leaflets dealing with cholera and cleanliness were distributed after cinema show, magic lantern shows and during group talks, poster demonstration and village health committee meetings.

(vi) *Health Education Workshop*.—The Visiting Professor of Health Education, All India Institute of Hygiene and Public Health, Calcutta, conducted one 'Health Education Workshop' with members of the staff of this centre.

(vii) A health exhibition was organised at Bora High School on 28th, 29th and 30th March, 1956. The health centre staff were put on duty to explain the different posters and charts displayed there. Health section in an exhibition held, in connection with the Republic Day celebration at the Mahamaya High School, Singur, was organised by the Health Centre staff.

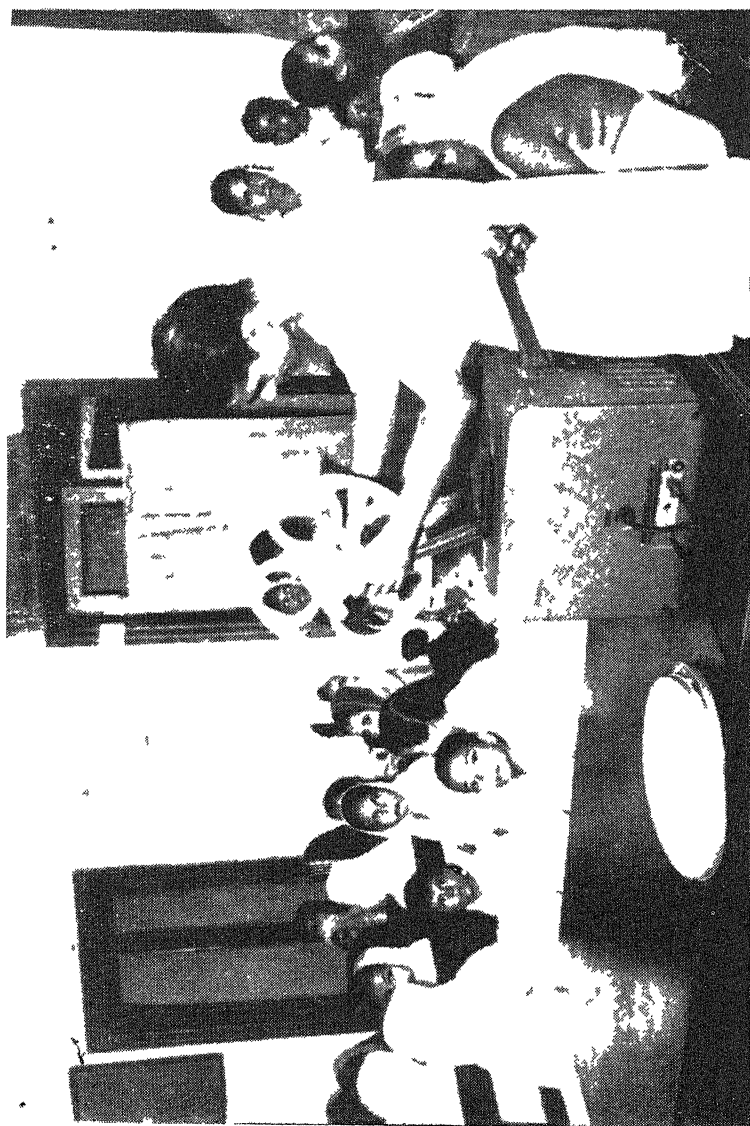
### *Training*

One of the most important activities of Singur Health Centre is the provision of field training in existing health practices to different



A SANITARY INSPECTOR GIVING A HEALTH TALK TO VILLAGERS  
WITH THE AID OF FLANNELGRAPH.





HEALTH EDUCATION THROUGH AUDIO VISUAL AID.



categories of health personnel and persons interested in the health of the community. The nature and extent of training varies according to needs and interests of a particular group of trainees. Some are received as Visitors, some come and stay for a period and participate in the field work and others come for observation of different activities.

(a) *Visitors*.—Visitors from India and abroad visited the Centre to study, to observe and to learn our ways of doing things. The members of the staff were very much benefited by free discussions with different experts in public health and allied subjects. The programme included seminars, conferences, together with field visits with the members of the staff of the centre. All the facilities were given to the visitors for demonstration of field activities.

Visitors coming from different parts of India . . . . .	39
Visitors coming from outside India . . . . .	30
<hr/>	
Total . . . . .	69

(b) *Participative Training*.—Students from different institutions mainly of All India Institute of Hygiene and Public Health, Calcutta, reside in Singur for a particular period when self-participative work by them are carried out under the guidance and supervision of respective staff in a manner similar to hospital clerkship. The students' hostel has been completed and trainees resided there.

*Students from All India Institute of Hygiene and Public Health.*

(i) *D.P.H., I.P.H. and D.M.C.W.*.—The students of these courses spend five weeks in Singur. This year they made a general health survey and an epidemiological investigation in the villages of Apurbapur and Bora of Singur Union. They studied rural sanitation problems and themselves constructed two tube wells, two dug-well latrines and several manure pits in the villages. The students were taken to Burdwan for a visit to Extension Training Centre and Community Development Block and to Tarakeswar for demonstrating fair sanitation. The programme was carried out under the guidance and supervision of different heads of the Departments of the Institute in collaboration with Health Centre staff.

(ii) *M.E. (P.H.) and Short Course in P.H. Engineering*.—They spent one week in Singur and took field training in environmental sanitation. In this year, several demonstrations on First Aid were also arranged for this batch of students.

(iii) *Dip. Diet, Certificate Course in Nutrition and Diploma in Nutrition*.—The students of these courses spent 10 days for diet survey of a group of families in the village and nutritional assessment of villagers.



(iv) *Public Health Nurses*.—The students of the Public Health Nursing course came to Singur in two batches and stayed for 4 weeks for participative training in their different branches. They conducted deliveries in the maternity unit and in the village homes under the supervision of experts. They followed up these cases in their homes and also in the clinics in the company of the Health Centre staff during their routine visits and clinic attendances. Each student was assigned to a particular school, to work as school health nurse under the supervision of R.M.O.H. They also attended the tuberculosis clinic and paid home visits for follow up of local tuberculosis patients. They also studied the problem of rural sanitation and observed their solution. The students were taken into Burdwan for observing the Community Project and Training Centre for village level workers, to Serampore for observing the tuberculosis hospital and to Begumpur for seeing the cottage industries.

(v) *Dais*.—To give safe delivery service to the mothers of the area, the indigenous women desirous of practising as dais were given six months training in elementary midwifery. With the progress of time, dai's work which was the hereditary profession of low class illiterate women is now being looked upon as a dignified social service. Widows and dependants from better class families are coming forward to take up this training and practise the profession. The course is planned for six months and two batches are taken in each. A course of 20 lecture-demonstrations each in hygiene and midwifery is given. The course is repeated at least twice and the pupil dai is encouraged to take part in demonstrating to other candidates. During the training period, she conducts a minimum of 20 delivery cases under supervision. After completion of the training, an oral and practical examination is held. A certificate is given to successful candidates.

(c) *Village Volunteers*.—People's active co-operation in health work is essential, specially in our country where the economic level is very low and the number of technical personnel is inadequate. In the matter of arousing consciousness and stimulating responsibility, the primary importance is the training of natural leaders and of youths of the village in health and social work. With this idea, Singur Health Centre, from its inception, has introduced a training course for village volunteers. The classes were held in the afternoon when most of the villagers are free. More emphasis is given on practical demonstration.

(d) *Students from Sir John Anderson Health School*.—The pupil health visitors spend one month in Singur to study the rural health and specially the maternity and child welfare work. They were taken to Burdwan for demonstrating community project activities, to Serampore for demonstrating water works.

(e) *Training of Primary School Teachers*.—As there are very few school health nurses in India, school teachers are being utilised at present for performing the school health work. The primary school teachers are deputed by the Education Department of Government of West Bengal for training. During the period of six weeks, they are

taught various subjects as General Science, First Aid, Rural sanitation, Communicable Disease, School health, Health Education and Public Health practice so that they can look after the health of school children. During the training period, the teachers get a stipend of Rs. 32/- and after successful completion of the training, they get an extra allowance of Rs. 60/- per annum by Education Department for school health work.

(f) *Orientation Training for Community Project Health Personnel.*— Since 1953, a new course of field training has been added to the activities of Singur. The course is imparting public health training to the different category of health personnel employed in the C.D.P. and N.E.S. Blocks of Eastern Zone of India. It is an in-service training limited to the health personnel employed in Community Project and National Extension Service Blocks.

Period of training . . . . .	8 weeks
Working hours . . . . .	308 hours
(a) Lectures . . . . .	120 "
(b) Field work (practical) . . . . .	148 "
(c) Discussion . . . . .	40 "

During the period under review four batches of students have received training. A team of five, viz. doctor, midwife lady health visitor, health inspector and health assistant is sent here for training.

The health personnel of different development blocks of our country work as a team. There is plenty of opportunity here for the different members of the team to live together in the same hostel, work together for the duration of training. The atmosphere here is conducive to inculcate in them the team spirit of public health, which is so important for work. The training gives the new methodology of approach to the village health problems and tells them how to get the confidence of the villagers in solving them and to make them believe that there can be eliminated by their own combined efforts. Such Training is normally imparted through talks demonstration group discussion, seminars and audio-visual equipments. The Professors of All India Institute of Hygiene and Public Health, Calcutta including W H O. staff took active part in teaching.

Thus their knowledge in medical science is orientated to the welfare of the community as a whole and not to individuals, as clinicians have been doing so long.

TABLE II

*Distribution of Trainees coming from different states.*

	6th batch.	7th batch.	8th batch.	9th batch.
Bhopal . . . . .	2	—	—	—
Assam . . . . .	—	5	4	5
Orissa . . . . .	—	4	2	5
Bihar . . . . .	—	3	—	4
U. P. . . . .	4	—	—	1
Tripora . . . . .	—	1	1	3
West Bengal . . . . .	—	—	13	28
Total . . . . .	6	13	20	46

TABLE III  
*Participative Training.*

Date of commencement of Training	Batch of students	No. of students	Period of stay
7-6-55	Orientation Course (2nd batch) . . . . .	6	8 weeks
16-8-55	Ditto (3rd batch) . . . . .	13	8 „
5-9-55	Short Course in Rural Water Supply and Sanitation.	8	1 week
3-10-55	Village Volunteers . . . . .	19	3 weeks
1-11-55	Orientation Course (4th batch) . . . . .	21	8 weeks
20-11-55	Public Health Nurse (1st batch) . . . . .	12	4 „
1-12-55	Lady Health Visitor . . . . .	3	4 „
11-12-55	Dip. Dist . . . . .	5	10 days
11-12-55	Public Health Nurses (2nd batch) . . . . .	12	4 „
11-12-55	Certificate in Nutrition . . . . .	1	10 „
17-11-56	D.P.H. . . . .	56	5 weeks
17-1-56	L.P.H. . . . .	9	5 „
17-1-56	D.M.C.W. . . . .	14	5 „
1-2-56	Dais . . . . .	4	6 month
6-2-56	D.N. . . . .	3	2 weeks
20-2-56	M.E. (P.H.) . . . . .	8	1 week
20-2-56	Certificate Course in P.H. Engineering	9	1 „

TABLE III—*contd.*

Date of commencement of Training	Batch of students	No. of students	Period of stay
26-2-56	Certificate Course in M. & C. W. . . . .	7	3 weeks
27-2-56	Health Inspectors of Orissa . . . . .	44	1 week
1-3-56	Primary School Teachers . . . . .	19	6 weeks
15-3-56	Orientation Course (1st batch) . . . . .	46	8 „

3. *Observation study.*—Different batches of students sponsored by various institutions come to Singur for one or two days to observe the various activities of the Health Centre. Lectures and demonstrations were generally arranged on the following subjects to the different group of trainees.

- (a) Health Education in the area.
- (b) School Health services and visit to a school.
- (c) Maternity and Child Welfare activities.
- (d) Demonstration of village health committee.
- (e) Environmental sanitation.
- (f) Public Health Laboratory service.

TABLE IV  
*Observation study.*

Date	Batch of students	Sponsoring authority	No. of students
7-6-55	Volunteers . . . . .	Bharat Sevak Samaj . . . . .	29
15-6-55	General Nurses . . . . .	Medical College Hospital . . . . .	32
24-6-55	D.T.M. & H. students . . . . .	School of Tropical Medicine . . . . .	34
29-6-55	Public Health Nurses . . . . .	A.I.I.H. & P.H. . . . .	24
2-7-55	D.P.H., L.P.H., D.M.C.W., D.I.H. and D.N.	Ditto . . . . .	85
11-7-55	Village Level Workers . . . . .	Extension Training Centre, Fulia No. 1.	47
27-7-55	M.B.B.S. students . . . . .	National Medical College . . . . .	100
9-8-55	Social Workers . . . . .	Calcutta University . . . . .	36
21-8-55	D.I.H. and D.N. . . . .	A.I.I.H. & P.H. . . . .	4
1-9-55	Certificate Course in Biometry	Ditto . . . . .	5
21-9-55	M.B.B.S. students	R. G. Kar Medical College . . . . .	125
8-10-55	Teachers . . . . .	State College of Agriculture . . . . .	26
13-10-55	M.B.B.S. students . . . . .	Nilratan Sarkar Medical College . . . . .	90
21-11-55	Village Level Workers . . . . .	Extension Training Centre, Burdwan.	41
6-12-55	School students . . . . .	Pratt Memorial School . . . . .	36

TABLE IV -continued.

Date	Batch of students	Sponsoring authority	No. of students
2-1-56	General Nurses . . .	Medical College Hospital . . .	29
17-1-56	Ditto . . .	Ditto . . .	17
21-2-56	Ditto . . .	Ditto . . .	16
28-2-56	Ditto . . .	Ditto . . .	14
7-3-56	Ditto . . .	Ditto . . .	20
7-3-56	M.B.B.S. students	R. G. Kar Medical College . . .	61
14-3-56	Ditto . . .	Ditto . . .	54
5-4-56	Volunteers . . .	Youth Camp, Singur . . .	40
7-4-56	Home Economics . . .	Agricultural Institute, Allahabad	10
24-4-56	Social Workers . . .	A.I.I. of Social Welfare and Business Management.	35
26-4-56	Social Education Organisers . .	Sriniketan, Viswabharati . . .	66
26-5-56	Ditto . . .	S.E.O. Training Centre, Belur Math.	20

Apart from the regular training of different batches of students, in-service training to Lady Health visitors, Mrs. N. Sarkar and Mrs P. Sarkar who for e. Singur Health Centre, was arranged from 13th February to 25th February.

## REPORT OF THE MATERNITY AND CHILD WELFARE SECTION, RURAL HEALTH UNIT AND TRAINING CLINIC, SINGUR

During the year, the goal of providing adequate health services, both curative and preventive, not only to the mothers and children but for the family as a whole, was achieved for a part of the area by the opening of the Thana Hospital at Singur and the Union Health Centres at Bonga and Balarambati. All the above centres are established under the auspices of the Government of West Bengal. Service was brought nearer to the people not only by this procedure but also by opening two sub-centres for Maternity and Child Welfare work, one at Singur (Khataguri) and the other at Kumbhari Union. The latter is one of the three additional unions to be included in the Thana Health Centre scheme of the future.

### Staff

One Lady Medical Officer, One Public Health Nurse and two Health Visitors were also appointed during the year. The total technical staff at the close of the year for M. & C. W. work therefore were 2 women doctors, one public health nurse, 6 health visitors, 5 midwives and 2 dais.

### Services

The section as in the previous years organised and provided the following services to pre- and postnatal mothers, infants and toddlers as (1) Health supervision in the homes and in the clinics (2) Medical examination including laboratory diagnosis (3) Treatment of minor ailments (4) Delivery service (5) Immunization—mainly against smallpox, cholera and typhoid (in collaboration with the Administrative and Environmental Sanitation sections). All the services were provided free. The clinics were held every week in each of the four Union Centres and at the two sub-centres. In addition weekly clinics were also conducted at three other places in the Singur Union—Khorda—Rashtree, Athalia and South Mananadipti.

(1) *Prenatal care*.—This is the most important service. Every effort is made to contact the prenatal mothers as early in pregnancy as possible. During the year 2454 mothers were contacted during the antenatal period. On the average each mother was visited 3 times in the homes. Efforts were made to make these visits useful and instructive to the mothers by giving individual instructions in health and hygiene, by routine obstetrical examination, the estimation of the hemoglobin by Tallquist Scale and by the examination of urine for albumin.

In the clinics, a thorough medical and an obstetrical examination was carried out for all the mothers. Complete blood examination including a Khan test was done as a routine for all at the first visit. Each mother was given individual attention and instructions regarding her health and hygiene. Group demonstrations were also held.

Treatment for minor ailments was given when required. Mothers needing more intensive treatment were either admitted in one of the Health Centres or referred to one of the Calcutta Hospitals. Nearly 49.3% of the mothers took advantage of the clinic service.

Extra nourishment, in the form of powdered milk and multivitamin tablets obtained through the various humanitarian agencies were given to the needy mothers.

A considerable proportion of mothers are found to be suffering from various nutritional deficiencies, general debility and anaemia. Cases of tuberculosis of the lungs and venereal diseases were met with occasionally.

(2) *Delivery service*.—With the opening of the sub-centres it has become possible to offer trained delivery service through the midwives to all the village in the Singur and Nasibpur Unions. The staff conducted 358 deliveries in the domiciliary areas. In the four bedded maternity Home there were 216 admissions. 173 delivered normally, 45 were admitted for false pains. 11 mothers were treated for anaemia and 19 abnormal deliveries were conducted.

(3) *Post-natal care*.—Lying-in care was provided for 10 days to 31 mothers delivered by the staff in their own homes. In the maternity home they had to be discharged earlier, on account of lack of space. However, if the mothers were from nearby villages lying-in care was continued by visits to their homes upto 10 days after delivery. Four to six weeks after confinement, they were advised to come to the clinics for a complete medical and gynaecological check-up. Later they were followed in the homes and in the clinics. Instructions were given regarding their diet and any other problem, till the child was one year old.

(4) *Infant and Pre-school care*.—As it takes one month for each staff to cover her area for home visiting, infants were usually contacted between the 1st day and a month of delivery. Under the existing conditions, the staff could pay about three or four visits to each infant. 2457 infants were visited in the homes. Mothers were urged to bring their babies every month or oftener if necessary to the clinics. 33.83% of infants attended clinics. At each visit relevant instructions and demonstrations were given on the proper method of feeding, training in good health habits and control of communicable diseases. The maternity and child welfare staff helped the sanitary inspectors in their vaccination programmes.

1200 toddlers attended the clinic. During the year 789 were visited at home.

Morbidity and mortality due to prematurity, gastro-intestinal infections, under-feeding or mismanaged feeding, poor maternal health, ignorance and poor economic condition still continue to be very difficult problems to tackle.

#### *Training programme*

The staff participated in the training of (1) D.P.H., D.M.C.W., C.P.H.N., and C.M.C.W. students of the Institute, (2) the pupil health

visitors of the Sir John Anderson Health School, (3) students of the Community Development Project scheme under the Ford Foundation.

*Collection of vital statistics*

Detailed records are kept of the births, maternal and infant deaths and still births occurring in the area. Diagnosis of the cause of death has to be arrived at from the histories taken from the relatives by the health visitor and public health nurse. This, though not satisfactory is an improvement over the vital statistics reports of the illiterate village choudhars.



## REPORT OF THE HEALTH EDUCATION SECTION

Dr. Morey R. Fields, WHO Visiting Professor of Health Education joined in June 1955. Mr. G. R. Amritmahal was appointed Assistant Professor of Health Education in August 1955. Two posts—one of Demonstrators and one of Photographers have been sanctioned in connection with the Certificate Course in Health Education. They were not filled in during the period under report. An Artist was appointed for the Urban Health Centre, Chetla and at present he is working in the Institute.

*Teaching*

The Section participated in teaching health education in all the courses offered by the Institute. Each course had different hour allotments for health education. Thus, the students for the DPH, LPH and DMCW had 16 hours of lecture discussions, 9 hours for practicals and two days at the Singur Health Centre. The students for the certificate course in Public Health Nursing had 40 hours including both lecture-discussions and practical work. In addition, practice teaching for the students was arranged through the courtesy of the National High School and the Tantia High School in the city. The teaching of each of these students was evaluated by the Section staff and by the Public Health Nursing staff. Other courses like Diploma in Dietetics, the Certificate in Maternal and Child Health, and the M.E. (P.H.) had 8 to 10 hours devoted to Health Education.

At Singur health education lectures, discussions, and demonstrations were part of the reorientation course in public health for health workers in Community Development Projects. Various methods are being tried to give the best possible experience to these students whose primary emphasis is on field work.

*Three Month Course*

The most important development as far as this Section is concerned was the sanctioning by the Government of India of a certificate course in health education. It was planned to have this course started in January 1956 but due to various reasons it did not begin until June 1956. The number of students admitted was 20 and the students were drawn from all State Governments and other official and non-official agencies. This is an in-service experience and is not designed to train health education specialists.

*Ten Month Course*

A draft proposal for the ten month course leading to a diploma in health education of the Calcutta University was prepared. This is being discussed with the Director and other members of the faculty.

### *Research*

Planning for two research projects were under way. One of these to be done in Singur has an objective to study the attitudes of people towards DDT spray. The Assistant Engineer at Singur reported resistances on the part of people to accept DDT spray in the houses as a part of the anti-malaria campaign of the Singur Health Centre. It is hoped that when the study is completed some helpful ideas can be offered to the Engineer and the staff in their working with people.

The second project is to be done at Calcutta. In this project the usefulness of the mobile cinema as an effective tool in educating the people is to be studied. The work will be concentrated mainly in different schools in the Calcutta area.

### URBAN HEALTH CENTRE, CHETLA

The Section was called upon to help in the opening ceremony of the Urban Health Centre. The main contribution of the Section was a display on the bulletin board depicting the health problems of Chetla. When the Centre started operating the Health Education Section was called in to help in the smallpox vaccination and the cholera immunisation campaigns in the area. Programmes were centred around the film van. Group talks were given to the people on small-pox, environmental sanitation problems, personal hygiene, and others. The Corporation staff who were conducting the immunisation campaign greatly appreciated the help that was rendered to them.

### SINGUR

Apart from the field training of the various groups of students in Singur the main thing to report on Singur activities was the two-day workshop conducted at the health centre for better staff relations. The participants of the workshop enjoyed the new experience thoroughly and felt that more such conferences and discussions would be very helpful both from the point of staff relations and in their approach to the people. Assistance was given to the Officer-in-Charge, Reorientation Training, in evaluating the courses that have been given to the Community Development Project students.

### ALUMNI ASSOCIATION ANNUAL SESSION

This was one of the major activities of the Section during the period under report. This involved planning, advising, designing and preparing exhibits for the various Sections of the Institute in connection with the Exhibition. One hundred and eight charts were prepared and assistance was also rendered in the display of exhibits by the Maternal and Child Health Section. The proceedings of the symposium on family planning were recorded.

#### INDIAN INDUSTRIES FAIR

Mr. Amritmahal was called in by the Director General of Health Service to help in the setting up of the Health Ministry staff in the Indian Industries Fair, New Delhi, October to December. The Institute sent a number of exhibits for display in the stall.

#### PARTICIPATION IN COMMITTEES

Dr. Morey R. Fields was appointed a member of the Sub-Committee on the dissemination of valuable information in nutrition. As he could not attend the meeting called in May 1956 in Madras, the Director General of Health Service instructed Mr. Amritmahal to attend the meeting. Dr. Fields has also been appointed a member of the Subject Advisory Committee, Preventive and Social Medicine by the Government of West Bengal.

#### RESEARCH PROJECTS

The Section is serving in an advisory capacity on two research projects in Singur. One is the Rural Field Study of Population sponsored by the Government of India and the International Population Council. The second is the Research-cum-Action project sponsored by the Ford Foundation and the Government of India. Both these are fundamentally health education projects and the Section is being consulted at all stages of the planning.

#### SERVICES

Art, photographic and audio-visual services were provided for various Sections of the Institute, the Research Club and for other meetings held at the Institute. The film van gave 97 shows in and around Calcutta. Requests came from adjoining Municipalities, schools, industrial establishments and social clubs. Some shows were given in bustees.

## SECTION II

### REPORT OF THE SECTION OF EPIDEMIOLOGY

DR. S. C. SEAL

#### *Administrative changes:*

Dr. A. L. Saha, M.B., D.T.M., D.P.H. joined the Section as Assistant Professor of Epidemiology on the 6th July, 1955. As no suitable candidate was available to fill up the second post of Assistant professor, the post was temporarily down-graded to that of a Demonstrator and Dr. Sunil Kumar De, M.B., D.P.H. was appointed with effect from 10th November 1955.

Dr. S. K. Sen Gupta, B.Sc., M.B.B.S., D.P.H. and Dr. S. K. Lohia, B.Sc., M.B.B.S., D.P.H. were appointed as Field Medical Officers for the Community Project Health Survey Unit organised by the Section in June 1955.

Mr. Sudarsan Das who was employed as a Laboratory Assistant under the M.C.H. scheme was discharged from service in August, 1955.

Dr. D. K. Banerjee, M.B.B.S., D.T.M. & H., T.D.D. joined as A.M.O. for T.B. Clinic at the Chetla Urban Health Centre on the 1st March, 1956. Miss Tapati Das joined as Social Worker and Sri T. K. Maitra as Computer of this Section at the Urban Health Centre, Chetla in February, 1956.

The total number of vacancies at the end of the year was 28 in the different units of the Section as follows: (1) Institute—Laboratory Technician-2; (2) Singur Rural Health Unit—Field Instructor (Medical)-1; (3) Urban Health Centre—Epidemiologist-1; Assistant Medical Officer-3, Statistical Assistant-1, Laboratory Technicians-2, X-Ray Technician-1, Social Worker-2, Health Visitor-2, L. D. Clerk-3, Nurse-2, Dispenser-1, Peons-5, Sweeper-3; (4) Community Project Health Survey—Statistical Demonstrator-1 and Field Worker-1.

#### *1. Teaching:*

The Section participated in the teaching of all the main courses offered by the Institute and also took part in the Social Work Course of the Calcutta University and the Health Visitors' Course of Sir John Anderson School. It also continued to collaborate in the teaching of social, preventive and public health aspects of Communicable Diseases to D.P.H., L.P.H., and D.M.C.W. students at the Nil Ratan Sircar Medical College, Calcutta.

In addition, the Section participated in the Orientation Course of the Maternity and Child Welfare Officers of the different states, and in the teaching of students of Diploma courses in Dietetics and Nutrition and of the Certificate Course in Statistics.

As in the previous years the field training of the students was held at Singur during the months of January and February. The programme of general health survey included a study of incidence of tuberculosis and diphtheria in the two villages surveyed. Mock Epidemics on Typhoid and Cholera were organised locally for investigation by the students and the reports of the general health survey and the mock epidemic investigation were presented and discussed by the students in special seminars held for the purpose.

## 2. General Health Survey by Students :

A general health survey of the villages, Apurbapur and Ghanashyampur which are within half a mile from the Singur Health Centre was carried out by the Post-graduate students under the guidance and supervision of the staff of the Epidemiology Section during the months of January and February, 1956

The survey covered 193 families and 1207 individuals. There were 889 females per 1000 males. The birth rate was 43 and death rate 9.9 per mille. There were four deaths among infants, two deaths among pre-school children, one among adults and 4 deaths among the old age group above 55 years. The infant mortality rate was 77, abortion rate was nil and still-birth rate 1.9%. The total literacy rate was 45.6% including 25.4% just literates. The villagers organised a night school for adult education.

## 3. Research and Investigations :

(i) *Studies in the epidemiology of plagues.*—The experimental work done during the year 1954 in the laboratory-bred white mice on the problem of persistence of plague infection during the inter epidemic period indicated that the infection might persist in chronic form in the rat population (commensal or wild) and that it was possible for this infection to cause bacteraemia at times in some of them leading to infection of the infesting fleas and transmission from rat to rat and ultimately bringing about a simmering or open epizootic. During the year under review this experiment was repeated with commensal rats collected from the local fields. The results obtained were similar to that of mouse experiment. Similar experiments were simultaneously carried out in artificially immunised rat with interesting results.

(ii) *Health survey of the Community Project Areas.*—The Government of India decided to carry out rapid health survey of the Community Project areas particularly of the part B and C states to obtain a base line of the existing health and socio-economic conditions at the initial stage, so that such surveys repeated 5 or 6 years afterwards would give a comparative picture of the development and progress made during the period.

The first half of 1955 was spent in recruiting staff and in giving them the necessary training by actually carrying out some surveys in the Singur Health Centre Area. Following this training a test survey of Saktigarh Community Project Block under the Government of West Bengal, consisting of 174 villages and 85,000 population was completed by November, 1955. The party was then shifted to Madhya Bharat to carry out the survey of the Dabra Community Project Block consisting of 199 villages and 83,111 population. This survey was completed by the end of March, 1956. By the middle of April, 1956, the party was shifted to Dungarpur Community Development Block in Rajasthan and the work was in progress upto the end of the year under review. The total output of the work is shown in the table given in the next page.

TABLE

Output of work in the Community Project Health Survey during the year under review.

Project	Area sq. mls.	Population	Villages	Vill surveyed	No. of families examined
1	2	3	4	5	6
Saktigarh (West Bengal)	148.0	67,041 *85,928	*152/174	54	586
Dabra (M.B.)	350.0	66,926 *83,111	*155/199	35	589

Project	Individuals examined					Blood samples examined	Stool samples examined
	Male	Female	Adult	Children	Infant		
1	7	8	9	10	11	12	13
Saktigarh (West Bengal)	1,520	1,485	1,774	1,108	123	3,005	727
Dabra (M.B.)	1,614	1,396	1,870	988	152	3,006	2,239
							1,395

\* Population taken for survey was approx 67,000 and the number of villages was adjusted accordingly.

#### 4. Activities of Urban Health Centre, Chetla :

(a) The Urban Health Centre at Chetla, Calcutta, began to function under the Institute from January, 1956. Of the three clinics proposed to be started there the T.B. and the V.D. clinics functioned for only one month before the closure of the year under review. During this period the attendance in the T.B. and V.D. clinics were 28 and 43 respectively.

(b) *Smallpox vaccination work.*—As smallpox was found to be one of the important causes of morbidity and mortality in the area, it was decided to supplement vaccination work carried out by the Corporation staff. With the help of two vaccinators appointed temporarily, 2088 vaccinations including 278 primaries were performed in the Bustee areas with regular follow up of every case during the months of February, March and April, 1956.

(c) *Socio-economic survey of the Bustee area.*—It was the expressed desire of the Union Health Minister that since the Urban Health Centre was located in an area where more than one-fourth of the population (28%) lived in the Bustee, the Institute should carry out a socio-economy survey of these Bustee people to indicate the steps which could be taken for the improvement of their lot. Accordingly, a pilot survey was planned and carried out in one Bustee at 10, Govind Auddy Road during the period between the 2nd March and the 23rd April, 1956. The findings were briefly as follows:—

The number of families living in the Bustee was 50 and consisted of 246 members—127 males and 119 females. Thus the proportion of females was 937 per 1000 males as against 536 females per 1000 males in the whole city. The average size of the family was 4.92 as against 5.21 in the whole of India. All women above 20 years were married as against 85.2% of males of the same age group but the percentage of widowhood was 31.4 and 26 married women had no living child including 22 (with 7 widows) who had no issue at all. Out of 3.47 children born per married woman, 2.35 were alive during the survey. The birth and death rates were 40 and 4.06 respectively per mille.

The percentage of illiterates above 5 years of age was 44.6 (male 20.2%, female 70.4%); 12.4 were just literates, 25.2 had primary, 12.3% High School and 5.5% University and Vocational Education.

Of the 70 persons above 15 years, 4 were in school and 62 (about 94%) were gainfully employed. Of the latter 19 were artisans, 17 office workers and others were occupied as shop-keepers, vendors, motor-drivers, teachers, technicians, etc. Only six females above 15 years were employed as maid servants and three others as part-time workers and the rest were housewives.

Addiction to alcohol was surprisingly negligible and only one person was addicted to opium, while the common habits were smoking and *pun-chewing*.

The bustee consisted of huts constructed with the materials like Kerosin tin, tiles, C.I. sheets, bamboo chips, tarred papers, rags and muds, etc. However, nearly one-third of the huts had cemented floor. One of the huts was being used as a smithy.

The sanitary conditions were very unsatisfactory in the majority of the huts. There were 4 filtered water taps inside the house between 10 families and the remaining 40 families were using three Corporation water taps provided within the bustee, the supply of water being very inadequate. There were only 3 latrines attached to the huts for the use of 8 families. The rest were using six other service privies with single seat. The maintenance and the sanitary conditions of these privies were very unsatisfactory. There was gross over-crowding in two-thirds of the huts, the space per person being less than 30 sq. ft. The refuse was being heaped in an open space inside the bustee and partly disposed of in the Corporation dustbin on the main road, 50 yds. away from the bustee area. On the west side of the bustee there is a tank which though kept very unclean, was being used by a large number of Bustee dwellers for bathing and domestic purposes. In spite of the shortage of space two families were keeping cows and another family pigeons as pet birds.

The average annual per capita expenditure was estimated to be about Rs. 310/-. It varied between Rs. 83/- and Rs. 700/-. Of the people, 45.7% were spending less than Rs. 250/- per capita, 43.4% between 250/- and 500/- rupees and only 10.9% families above Rs. 500/-. The proportional distribution of expenditure on different items were as follows:—

Food . . . . .	56.3%
Production . . . . .	18.5%
House rent and taxes . . . . .	5.6%
Fuel and light . . . . .	4.6%
Clothing and foot-wear . . . . .	5.2%
Education . . . . .	1.3%
Medicines and medical advice . . . . .	3.6%
Travelling about . . . . .	1%
Miscellaneous . . . . .	4.4%

At the time of survey 10.0% of the population was sick, 0.4% being acutely ill, 3.6% chronically ill and 6.0% in indifferent health. During the past one year 16.6 per cent. of individuals were ill at one time or the other, the average duration of sickness being 16.7 days per person and 105 days per sick person. The diseases occurred in the following order: Diseases of throat and tonsil—8 cases, measles—6 cases, 5 cases each of enteric fevers, rheumatic conditions, genito-urinary disorders and skin diseases, 2 cases each of asthma, rickets, and diarrhoea and dysentery and one case each of tuberculosis, cholera, leprosy, filariasis, ulcer of stomach, meningitis and eye diseases. Twenty per cent. of the families utilised no medical aid, 46.6% utilised qualified physicians, 6.7% hospital and dispensaries and 26.7% homeopaths.



5. *Studies in the incidence of Diphtheria in Calcutta.*—Since 1953 cases of diphtheria have been on the rise in the city of Calcutta, Bombay and Delhi. In the latter two cities the health authorities had already launched a programme of mass immunisation of the school-going children. It was therefore thought necessary to study the incidence at Calcutta to assess the epidemic status. The work carried out by Dr L. M. Bhattacharji and Dr. A. K. Ghose Hazra of the Section revealed that the incidence as also the death rate had gone up by more than double, e.g., from 12.8 per 100,000 in 1952 to 28.09 in 1953 and 28.9 in 1954. The disease showed a marked prevalence during the rainy season, July-Oct. when 70 per cent. of the total deaths were registered; 85.2 per cent. of the attacks occurred in the age group between 2 and 10 years, 65.4 per cent. being in children below 5 years. The overall case fatality rate was 19.75 per cent. Taken by age groups it was about 70 per cent. in the age group below 2 years, 18.0 per cent. in age group 2-3 years, 11.6 per cent. between 3-5 years and 8.5 per cent. between 5-10 years. Only mitis type of *C. Diphtheria* was isolated.

#### *Service to others*

(1) On account of the continued prevalence of cholera and other gastrointestinal diseases in the city and frequent exacerbations in epidemic form the Corporation of Calcutta at the suggestion of the Professor of Epidemiology instituted a Water Supply Technical Advisory Board. Dr. Seal has been serving this Board as one of its members.

(2) Dr. Seal also presided over the symposium of the "BCG Vaccine in the Control of Leprosy" in the second Biennial conference of the Indian Association of Leprologists held at Jamshedpur in 1955. He also served in the following capacities:

- (1) Examiner in Final M.B.B.S. Examination of the Calcutta University.
- (2) Examiner in M.D. (Social Medicine and Public Health) of the Lucknow University.
- (3) Member of the Cholera Sub-committee, I.C.M.R.
- (4) Member of the Arthropod borne diseases, I.C.M.R.
- (5) Member of the Faculty of Tropical Medicine and Hygiene, Calcutta.
- (6) Member of the Journal Committee of the J. Ind. Med. Association and other committees.

#### *Publications 1955-56*

##### 1. By Dr. S. C. Seal:

- (a) Health of women in western countries—Bull. Alumni Assoc., A.I.I.H. & P.H., 2: 18, June, 1955.

- (b) The 1954 Outbreak of Encephalitis among children in Jamshedpur—Ibid. 2:25, October, 1955.
- (c) Viral Encephalitis—Editorial, J. Ind. Med. Assoc May 16, 1956.
- 2. By Dr. S. C. Seal and R. N. Ghose Chowdhury:
  - (a) Epidemiological aspects of 1954 outbreak of Encephalitis in Jamshedpur—J. Ind Med. Assoc. 26:371-384, May 16, 1956.
- 3. By Dr. L. M. Bhattacharji and A. K. Ghose Hazra:
  - (a) Epidemiology of some childhood disease in Calcutta with particular reference to Diphtheria—Bull. Alumi Assoc.—A.I.I.H. & P.H., 2:21, October, '55.
  - (b) Smallpox vaccination by the multi pressure technique —Ibid, 2:18, April, '56.
- 4. By Dr. L. M. Bhattacharji:
  - (a) Epidemiology in relation to human and animal diseases—Health and Welfare 2: July, 1955.
- 5. By Dr. A. L. Saha:
  - (a) Smallpox outbreak in a Railway Colony affecting infants and children—Bull. Alumi Assoc.—All-India Institute of Hygiene and Public Health 2, 31 October, 1955.

### SECTION III

## REPORT OF THE SECTION OF MATERNITY AND CHILD WELFARE

DR. MUKTHA SEN

The section as in previous years continued its activities of teaching, research and field services. The field responsibility was increased by the opening of the Urban Health Centre at Chetla in the month of December, 1955, after which the section had to provide health supervision to mothers and children in three areas, Chetla Health Centre area, Ward 8 of Calcutta and Singur Health Centre area, the latter two being already under its supervision.

In the teaching programme direct responsibility for organising and executing plans for three courses of the Institute viz., DMCW, C.M.P.N. and CPHN was continued as before. A special programme for this year was a Seminar Course organised for the MCH Officers of different States for a period of one month extending from 20th January, 1956 to 17th February, 1956. The Public Health Nursing Course which is in the third year of its existence is well established and can go ahead confidently like other two courses attached to the section. Considerable part of the time of the staff was spent in developing the new centre at Chetla and also organising the services in the Singur Health Centre area, where MCH services have been intensified.

#### *Staff*

Miss Cathie the Paediatric Nurse from the WHO left for New Zealand at the end of the academic year after completing three years of her assignment at the Institute. The section was sorry to lose her services and also of Miss J. R. Walker, instructor in P. H. Nursing and Midwifery who left for Kabul at the beginning of the year. Her duties were replaced by Miss I. M. Lovedee in the month of November, 1955. The services of Dr. D. B. Jelliffe and Miss M. Mackenzie were available for the section during the whole period. The section, therefore, had the privilege of obtaining assistance from these international staff for developing all its activities. Dr. (Miss) J. Deb was appointed in March, 1956 as a demonstrator.

#### *Teaching*

1. Courses attached to the section are:—

(a) D.M.C.W. (Diploma in Maternity and Child Welfare):

This diploma is given by the University of Calcutta. Fifteen students joined during the year, out of which 4 were private candidates and eleven were deputed by State governments with Government of

India and UNICEF scholarships. One of the private candidates discontinued after one month of her joining for personal reasons. Therefore fourteen candidates of this year and one failed candidate of the previous year, appeared for the final examination. All came out successful.

(b) C.M.C.W. (Certificate in Maternity and Child Welfare):

Seven students joined this course, four from State governments, one from Calcutta Corporation and two from private MCH organisations. All of them completed the course. These seven candidates and one failed candidate of the previous year appeared for the final examination and obtained their certificates.

(c) C.P.H.N. (Certificate in Public Health Nursing):

Twenty four students joined the course. Of these three were private and 21 were deputed by State governments with the assistance of Government of India and UNICEF scholarships. All the 24 students completed the course, of which 23 came out successful at the examination and got the certificate from the Government of India.

(d) Seminar Course:

This course was organised for the MCH Officers of different States, most of whom are in the position of A.D.H.S. In all, 11 Officers joined the course; one from the Indian Red Cross Society and one from each of the following states: Bombay, West Bengal, Andhra, Madhya Pradesh, Hyderabad, Punjab, Assam, Orissa, Madras and Uttar Pradesh.

A course of this nature which gives an opportunity to the workers who had proper preparation and also considerable experience in the special field of their interest, is very helpful as it enables them to discuss and benefit from each others experience, along with making them acquainted with the latest developments and advances in the field of maternal and child health.

2. The section participated in the teaching programme of the following courses:—

- (a) Diploma in Public Health.
- (b) Diploma in Social work.
- (c) Diploma in Nutrition.
- (d) Diploma in Dietetics.
- (e) Diploma in Industrial Hygiene.
- (f) Diploma in Tuberculous Diseases.
- (g) Health Visitors.
- (h) Certificate in Nutrition.
- (i) Orientation training for Community Project staff.

Practical training in the form of participation and demonstration was arranged in the Chittaranjan Sevasadan Hospital and in the Urban and Rural Maternity and Child Welfare centres of the Institute. In addition visits were paid to the various organisations and institutions serving the mothers and children in and around Calcutta.

### *Field Services*

The section has three areas for field services. The urban centre at 50, Colootola Street, Calcutta had to be continued even after opening the Chetla Health Centre in December 1955, in order to provide field training facilities to the C.M.C.W. course students that had joined on the 1st January, 1956. We had been serving in this area since 1932 and it was unfortunate that after 24 years of work in this area, we were not able to keep the continuity by persuading any local organisation to take responsibility when we shifted to Chetla in June, 1956. However the experience we gained in this area is of immense help to us in organising our work at Chetla.

The second centre is at 19, Chetla Hat Road and the third is the Rural Training Centre at Singur.

### *Urban Health Centre, Chetla:*

The staff working at Colootola Street gave some of their time for starting the work at the Chetla health centre from January, 1956. They did house to house survey in one of the areas and with the help of some more staff appointed for Chetla later, were able to contact 407 antenatals, 707 infants and 1077 toddlers during the period of five months (from January to May, 1956).

Weekly clinic also was started in the month of January, 1956 which was increased to twice a week in April and thrice a week in the month of May. Total number of clinics held during the period were 31 and total attendance was 1529.

In addition to the Colootola clinic staff, one nurse and two more health visitors were recruited in the month of March and May respectively.

*Urban Field (50, Colootola Street):* The area for the urban field service covers a part of Ward 8 in Calcutta and is situated near the Institute. The staff employed were two health visitors, two midwives and one public health nurse upto the end of December, 1955.

Complete service in the form of antenatal, and postnatal care was given to all the mothers. Health supervision of the children included service from the time of birth till the child was 5 years old in the form of infant and toddler care. Clinics were held twice a week for both

mothers and children together, but a doctor had been provided for each group separately. Contact of prenatal cases and new births in the area and the follow-up of mothers and children was done in the homes by midwives, health visitors and public health nurse. If required by the field staff the doctors from the section who conduct the clinics also visited the homes. There was also provision in the centre for keeping children with feeding and other problems. They were kept during the day with the mother in the clinic. This served as a demonstration to the mother on the proper management of the child and also helped the students to learn proper management of the situation. Certain amount of adult health was included in the last year's service in order to meet the need of the Public Health Nursing Course field training programme.

The total prenatal mothers contacted during the year were 200 and each got on an average 7.4 visits in the homes from the staff. Of these 83.5 per cent. attended the clinic and paid, on an average 3.1 visits. New births registered at the centre were 211 and each received on an average 8.4 visits in the house during the year. Of the total infants 56.4 per cent. came to the clinic and on an average paid 3.0 visits.

The number of infants transferred to the pre-school card on completing their 1st year was 177. Of these 66.6 per cent. came to the clinic for medical check-up.

Domiciliary midwifery service was provided for those who were expected to have normal deliveries and wished to get the services of the staff. 22 such deliveries were conducted by the staff during the year. A fee of Rs. 10/- was charged for those cases that could afford to pay, and others had free delivery service. All these mothers got a minimum of 10 days lying-in care at home by the centre staff.

The service through the clinic was an important activity of the centre. Here the mothers and children got a thorough medical check-up. Necessary laboratory and other examinations were done by the medical and other auxiliary staff of the section. Measures for promotion of health and prevention of disease were taken along with arresting of diseases by early diagnosis and treatment, either in the centre or in one of the affiliated hospitals. Much importance was given to health education through individual and group teaching and demonstration.

### *Vital Statistics*

The total population living in the area was not known, hence the calculation of birth rate was not possible. The infant mortality rate for the births that occurred in the area was 32 and stillbirth rate 13.6. There was only one maternal death in the area during this period. The number of births in the area were too small to give any representative data, but is useful for assessing the result from year to year.

### Research

*Attitude of married men towards family planning.*—A questionnaire method of investigation was done on married men of 10 villages in Singur Health Centre area and was presented as a paper at the Research Club meeting of the Institute during the period.

*Investigation into the use of supplementary foods* (i.e., animal milk, carbohydrate gruels, proprietary foods) in the first six months of life in lower socio-economic group in Calcutta and Singur (in progress).

*Investigation into incidence, distribution and late results of prickly heat in bustee children at Chetla, with special relation to possible late effects* (i.e., cessation of sweating, heat exhaustion, etc.).

*Investigation of clinical features, causation and liver changes in childhood cirrhosis in India.*

This investigation has been undertaken from the aspect of the local domestic cultural pattern, which tend to produce malnutrition, especially protein malnutrition in young children. A paper on this subject entitled: "Cultural blocks and protein malnutrition in young children in rural West Bengal" is in preparation.

### General Information

Professor of M. & C. W. had an opportunity to observe the M. & C. W. services in USSR as a member of the "Ten Medical Experts Delegation" from India, on the invitation of the USSR Government, during the period.

Assistant Professor of M. & C. W. went on study tour to USA in March 1955 for 6 months.

### Publications

(1) "Women in Industry"—published in the book for the Advance Course students on Productivity in Industry—Indian Institute of Technology, Khargpur, West Bengal, March 1956—Dr. (Mrs.) Muktha Sen.

(2) Maternity and Child Welfare—Indian Red Cross Society, Exhibition Number, November 1955.—Dr. (Mrs.) Muktha Sen.

(3) "Pediatric Education in relation to child in subtropical and tropical regions"—Pediatric (1955), Sept. 16,398—Dr. D. B. Jelliffe.

(4) "Cultural variation and the practical pediatrician"—Ind. Jr. Child Health (1956) 5,93.—Dr. D. B. Jelliffe.

(5) "Breast feeding in technically developing regions"—Courrier, April, 1956—Dr. D. B. Jelliffe.

(6) "Clinic observations on Kwashiorkor in Calcutta"—Jr. Tropical Pediatrics, June 1955—Dr. D. B. Jelliffe.

(7) "The problem of protein weaning foods in India"—Ind. Jr. Ped., Sept. 1955—Dr. N. L. Sharma.

Report of the Urban Centre (Colootola St.)

	Year			
	52-53	53-54	54-55	55-56
<i>Home Visits—</i>				
Antenatal 1st visits . . . .	320	284	310	200
Antenatal Re visits . . . .	1,243	1,410	1,189	1,285
Postnatal 1st visits . . . .	231	229	277	210
Postnatal Re visits . . . .	1,226	1,187	1,290	1,472
Infant 1st visits . . . .	260	257	282	211
Infant Re visits . . . .	2,069	1,777	1,458	1,559
Toddler 1st visits . . . .	181	184	281	177
Toddler Re visits . . . .	1,550	1,373	1,747	1,303
Demonstration and Supervisory visits .	297	304	274	268
Confinements . . . . .	29	19	33	22
<i>Clinic Visits—</i>				
Antenatal 1st visits . . . .	148	164	169	167
Antenatal Re visits . . . .	412	481	417	365
Postnatal 1st visits . . . .	119	113	103	89
Postnatal Re visits . . . .	298	332	277	171
Infant 1st visits . . . .	127	130	123	119
Infant Re visits . . . .	309	348	315	241
Toddler 1st visits . . . .	74	101	124	118
Toddler Re visits . . . .	304	363	447	423
Gynae. and Medical cases . . .	255	249	354	379
No. of clinics held . . . .	94	100	99	188
<i>Examination done at Home—</i>				
Abd. palpation . . . .	—	—	—	856
Hb. percentage . . . .	—	—	—	95
<i>Examination and Treatment done at Clinic—</i>				
Abd. palpation . . . .	—	—	—	479
Hb. percentage . . . .	341	427	248	82
Urine analysis . . . .	604	697	596	467
Vaccination . . . .	86	99	20	60



						Year			
						1955-56			
<i>Maternal Death—</i>									
1. Unknown	.	.	.	.	..	1			
<i>Abortion—</i>									
1. Prematurity delivery	.	.	.	.	..	1			
2. Unknown	.	.	.	.	..	1			
<i>Stillbirth—</i>									
1. A.P.H.	.	.	.	.	..	1			
2. Prolonged labour	.	.	.	.	..	1			
3. Placenta previa	.	.	.	.	..	1			
<i>Toddlers Death—</i>									
1. Gastro-enteritis	.	.	.	.	..	1			
2. Heart disease	.	.	.	.	..	1			
3. Cholera	.	.	.	.	..	1			
						Year			
						22-53	53-54	54-55	55-56
<i>Infants Death—</i>									
1. Prematurity	.	.	.	.	3	4	3	3	
2. Diarrhoea and dysentery	.	.	.	.	1	—	—	1	
3. Developmental defects	.	.	.	.	—	3	—	—	
4. Respiratory disease	.	.	.	.	1	2	2	—	
5. Convulsion	.	.	.	.	—	—	—	—	
6. Asphyxia and birth injury	.	.	.	.	—	—	—	—	
7. Sepsia	.	.	.	.	—	1	—	—	
8. Malnutrition	.	.	.	.	1	1	1	—	
9. Communicable disease	.	.	.	.	1	—	—	—	
10. Accident	.	.	.	.	—	—	2	1	
11. Unknown	.	.	.	.	—	3	4	—	
12. Others	.	.	.	.	—	—	1	1	
Total						7	13	15	7

*Laboratory Work—**1. Blood examination for—*

Total R.B.C., W.B.C. count, Colour Index and Dif. count, and Haemoglobin.	132	184	169	179
Cell volume . . . . .	—	—	78	104
Estimation of total portein . .	112	144	254	111
Ditto calcium . . . .	—	—	53	26
Ditto alb. and glob. . .	—	—	55	11
E. S. R. . . . .	—	2	2	3
M. P. and D. C. . . . .	9	13	12	91
Positive . . . . .	3	1	—	—
Microfilaria . . . . .		—	—	1(+ve).
Kahn test . . . . .	112	159	136	123
Positive . . . . .	3	5	2	4
Doubtful . . . . .	3	6	2	2

*2. Urine examination for—*

Chemical and microscopical . .	15	14	16	23
Presence of albumin . . . .	6	6	9	8
Ditto sugar . . . . .	2	—	—	1
Ditto cast . . . . .	—	—	1	3
Ditto T. V. . . . .	—	1	1	—
* Culture for B. Coli . . . .	—	—	4	2
Positive . . . . .	—	—	2	2

*3. Stool examination for—*

Ova and protozoa . . . . .	82	94	116	130
Positive . . . . .	23	32	45	66

*4. Cervical and vaginal smears for—*

Neisseria . . . . .	7	22	17	12
Positive . . . . .	1	—	—	1
Trico. vaginalis . . . . .	—	—	—	1
Sputum for A.F.B. . . . .	1	—	—	—
Throat swab for diphtheria . .	—	—	1	—
Throat swab for gram stain . .	—	—	1	—
Anal swab . . . . .	—	—	—	1

## SECTION IV.

## REPORT OF THE SECTION OF SANITARY ENGINEERING.

SHRI N. MAJUMDER.

*I. Staff*

Mr. F. K. Erickson who was loaned from the T.C.M. to the Institute remained as Professor of Sanitary Engineering till 15.5.56 when he handed over charge of the section to Sri N. Majumder. Sri Majumder was assigned to Delhi Joint Water and Sewage Board to undergo practical training on city water supply and sewerage for a period of six months which he completed on 5.5.56. He was appointed as the Professor of Sanitary Engineering from 15.5.56. During the period of Mr. Majumder's assignment to Delhi, Dr. T. R. Bhaskaran officiated as Associate Professor of Environmental Sanitation. Sri M. A. Sampathkumaran officiated as Assistant Professor of Sanitary Engineering during this period. Dr. Bhaskaran was subsequently appointed as Associate Professor of Environmental Sanitation on 15.5.56 consequent to the appointment of Sri Majumder to the Professor's post. Sri S. Subba Rao was appointed as Assistant Professor of Sanitary Engineering in August 1955. Sri A. V. Rao was relieved of his duties of Demonstrator in the Section on 13.7.55 to enable him to assume the post of Assistant Engineer (Public Health), Singur where he has since been in charge of the environmental sanitation activities of the Rural Health Centre. The post of demonstrator, vacated by him remained vacant for the rest of the year. Shri G. Ekambaram returned in September 1955 from U.K. where he undertook post-graduate studies in P. H. Engineering. He received the Diploma in Public Health Engineering from the King's College, Durham University. He resumed his duties as Technical Assistant in the Section on 16th August and was assigned to the Urban Health Centre, Chetla to look after the environmental sanitation activities of the Centre.

*II. Teaching*

D.P.H., L.P.H. and D.M.C.W. classes were held with 54, 11 and 14 students, respectively. The students in this class were given 53 hours of lectures and 172 hours of practicals and field demonstrations on sanitary engineering. They were taken to the industrial areas of Asansol and Jamshedpur. The tour lasted for 7 days and the students had opportunities to acquaint themselves with problems on environmental sanitation as related to industrial housing, water supply, drainage, sewage disposal, industrial hygiene, malaria control, etc. Mr. F. K. Erickson and Sri M. A. Sampathkumaran of the Section accompanied the students during the tour. Local field demonstrations on public health engineering practices were also arranged for the students. The students spent 8 days at Singur in two batches for training in rural sanitation practices.

M.E. (P.H.) and C.P.H.E. classes were conducted with 10 and 8 students respectively. The following hours of instructions were given to them :—

M.E. (P.H.)	Lectures	Practical and demonstrations hrs.
Sanitary Engineering . . . . .	238	457
Microbiology . . . . .	35	44
Statistics . . . . .	27	43
Epidemiology . . . . .	29	—
Public Health Administration . . . . .	23	—
Health Education . . . . .	7	—
Physiology and Ind. Hygiene . . . . .	28	14
C.P.H.E.		
Sanitary Engineering . . . . .	84	157
Microbiology . . . . .	9	9
Statistics . . . . .	7	15
Epidemiology . . . . .	11	—
Physiology . . . . .	7	—
Health Education . . . . .	9	—

The M.E.(P.H.) students spent 10 days at Delhi where they had an intensive training on malaria control measures at the Malaria Institute of India. They also had the opportunity to visit the water works and sewage treatment works at Delhi. Sri S. Rao accompanied the students during the tour. The students visited the industrial areas of Asansol, Tatanagar along with the D.P.H. students. They also spent 7 days at Singur to study rural sanitation.

A three months' orientation course in rural water supply and sanitation was offered to 7 graduate engineers who were deputed by different states. Hours of instructions were as follows:—

	Lectures	Practical and demonstrations hrs.
Sanitary Engineering . . . . .	95	104
P. H. Administration . . . . .	17	—
Microbiology . . . . .	10	10
Statistics . . . . .	4	4
Epidemiology . . . . .	9	—

The students of this course had practical training in the Community Project areas under the Govt. of West Bengal for a period of 2 weeks. In addition to this they were given intensive training on rural sanitation at Singur. The section also participated in the teaching programme of the following courses of which a summary is given below:—

	Lectures	Practical and demonstrations hrs.
1. D.I.H. and D.N. (Part I and II) . . . . .	43	20
2. Certificate Course in Ind. Hyg. . . . .	8	—
3. D.T.M. & L.T.M. . . . .	8 (4 hrs. each)—	—
4. Certificate in P.H. Nursing . . . . .	14	—
5. Social Workers Certificate . . . . .	16	—
6. Diploma in Dietetics . . . . .	6	—
7. Short course in M. & C. W. . . . .	12	—
. Orientation course under the Ford Foundation (4 batches)	86	129

### III. Rural Sanitation Programme at Singur

During the period under review the following work was executed at Singur under the technical supervision of the Section.

1. Tube well repaired . . . . .	1,013
2. New tube well sunk . . . . .	7
3. Tube well resunk . . . . .	18 (GI 7+BL 11).
4. Tube well aprons constructed . . . . .	42
5. No. of aprons repaired . . . . .	3
6. No. of squatting plates with water seal made . . . . .	220

### IV. Environmental Sanitation at Chetla

The Urban Health Centre at Chetla was inaugurated by the Hon'ble Minister on 30.12.55. The Centre has been functioning since then. The full complement of the staff for the Environmental Sanitation Section has not yet been appointed. Sri G. Ekambaran, Technical Assistant has been assigned to the Centre and has been in charge of the Environmental Sanitation Section of the Centre. The area in which the Centre is to operate is fairly large and has a population of 68,704. In the first instance a small section of this area (0.06 sq. mile, population 12,500 approx.) has been selected where it is intended to give intensive service with respect to sanitation. A scheme for improvement of water

supply, excreta disposal, garbage collection, and food sanitation of this project area has been prepared and has been submitted for consideration of the Technical Advisory Committee. A sanitary survey of the whole area is in progress which may be completed by the end of September.

#### *V. Research*

##### *I.C.M.R. Scheme on Industrial Wastes Disposal and Water Pollution Research.*

Work on treatment of distillery and sugar wastes is being continued. Treatment of distillery wastes with 2 per cent. lime followed by sedimentation was found efficient for removal of about 70 per cent. putrescible organic matter. To bring further purification of the wastes, the effluent, after lime treatment and passing of  $\text{CO}_2$  gas to remove excess lime, was suitably diluted with water and treated in an experimental trickling filter. Data so far collected show that there is no significant purification by this method of treatment.

Anaerobic digestion of the wastes, prior to biological treatment under different conditions has also been tried but its efficiency is very low. Further work on this aspect of the problem is in progress. Experiments on aerobic treatment by activated sludge method are also in progress. It was observed that the wastes attain a viscous consistency after aeration for 72 hours with 2 per cent sewage. Work on the nature of the material synthesised and the possibility of utilizing this for recovery of useful by-products is being continued.

An experimental pilot plant for treatment of sugar wastes has been constructed at the Bhita Sugar Factory, Bihar. Another experimental pilot plant for treatment of distillery wastes is under construction at the Bengal Distillery, Konnagar, West Bengal.

Two field units at Lucknow (U.P.) and Patna (Bihar) for carrying out industrial wastes survey have been established during this period. Suitable schedule forms for collecting information on the wastes disposal problems have been developed.

##### *I.C.M.R. Scheme on the effect of Sewage Treatment processes on the survival of tubercle bacilli.*

Work on the scheme which was started in May 1955, on the standardization of a suitable technique for the isolation and quantitative enumeration of tubercle bacilli from sanatoria sewage was continued. Microscopic and culture work in this connection involved the application of recognised bacteriological procedures for detecting tubercle bacilli in sewage samples obtained from Jadavpur T.B. Hospital. The effect of acid or heat treatment prior to inoculation into Lowenstein-Jensen's media has been studied. Attempts have also been made to incorporate Penicillin in the culture media to suppress the growth of other organisms. The results obtained show that it is possible to isolate tubercle bacilli from sewage by pre-treatment with 6 per cent.  $\text{H}_2\text{SO}_4$  or heat treatment at  $50^\circ\text{C}$ . for half an hour followed by inoculation on the media. Sampling and examination of sanatoria sewage at different stages of treatment is now in progress.

*I.C.M.R. enquiry on the study of the Septic Tank  
Latrines for the disposal of human excreta.*

The scheme was sanctioned with effect from 1st April 1955. The work however was delayed until December 55, when staff for conducting the study could be recruited. Two septic tank latrines were installed in Singur. One of the septic tanks was designed for 10 users and has been installed for the use of a joint family with 15 members. The samples collected from these septic tanks were examined chemically at the field laboratory at Singur. The laboratory there needed certain equipment to conduct the biological examination of the samples. Most of the equipment necessary for such examinations have been received now. Biological, chemical and microscopical examinations of the samples are now being undertaken at the field laboratory. Due to the absence of piped water supply in the area the latrines are flushed after use with water from a bucket. The sewage therefore is strong and the per capita contribution is far below the amount normally encountered in latrine flushed with water under pressure. Though the data collected so far are not conclusive it appears that the clarification obtained in these septic tanks is fairly satisfactory—about 60 per cent. settlement of solids is obtained in the tanks. Observations are being continued on the performance of these septic tanks. Since April 1956 this enquiry has formed a part of a broader study on latrines in which it is envisaged to study the different types of latrines.

#### *VI. Services*

Prof. F. K. Erickson at the request of the Govt. of West Bengal, visited the Darjeeling District in July to advise the State Govt. on rural sanitation measures. Both Prof. Erickson and Mr. Majumder gave consultation to the Central Public Health Organisation in New Delhi on the proposal which was submitted by them to the Government for the training of public health engineering personnel under Second Five Year Plan. Prof. Erickson participated in the W.H.O. sponsored seminar on environmental sanitation, which was held in Candy, Ceylon. Both Prof. Erickson and Dr. Bhaskaran participated in the first conference of the Public Health Engineers held in September at New Delhi. Both Dr. Bhaskaran and Mr. Erickson attended the annual meeting of the I.C.M.R. held at Nagpur. Prof. Erickson participated in the discussions of the Sub-Committees on Environmental Sanitation and Industrial Health while Dr. Bhaskaran participated in the discussions of the Sub-Committee on Environmental Sanitation of which he is the Secretary. Both Prof. Erickson and Dr. Bhaskaran participated in the various deliberations of the Calcutta Water Supply Technical Advisory Board of which they were members. Mr. Majumder participated as a delegate from the Institute in the symposium on Housing in Delhi which was organised by the National Building Organisation. Professor Erickson at the request of Government of India served in the Three-Man Expert Committee of engineers to recommend the short and long term measures for the improvement and augmentation of Delhi Water Supply. The services of Dr. Bhaskaran, Dr. Seth and Mr. Majumder were also called for to collect information for the use of this Expert

Committee. Dr. Bhaskaran and Dr. Seth conducted a survey of River Jumna. They recommended certain precautionary measures to prevent any gross pollution of the river as well as to protect the water supply of Delhi. They also recommended certain improvement of the routine examination of water as conducted by the Board. Mr. Majumder was appointed a member of the Public Health Engineering Research Committee of the Council of Scientific and Industrial Research. At the request of the Ministry of Health, Sri M. A. Sampathkumaran and Shri G. Ekambaram went to Imphal, Manipur, to investigate into the problems arising from the presence of excessive quantities of iron in the water supply of the town. Their recommendations were submitted to the Government. At the request of the Town Engineer, Chittaranjan, Mr. Sampathkumaran went to Chittaranjan in Sept., 1955 to investigate into the problems relating to water treatment there. This was primarily due to the biological growth in tanks, pipes etc. which based, on his recommendations, were corrected and remedial measures taken

#### *PUBLICATIONS.*

1. Studies on the effect of sewage treatment processes on the survival of Intestinal Parasites—T. R. Bhaskaran and others. Ind. Jour. Med. Res., 44,1, Jany. 1956.
2. Survival of Pathogens in Nightsoil compost heaps—T. R. Bhaskaran and others. Ind. Jour. Agr. Res. (Under publication).
3. Minimum Standards of Healthful Housing for India—N. Majumder, Prof. of the National Building Organisation Symposium on Housing, and Building Materials, New Delhi, March 1956.
4. A safe excreta Disposal in the Rural areas—N. Majumder, Health & Welfare, Vol. II, Aug. 1955.
5. Design and construction of Maternity Homes in rural areas—A. V. Rao & J. N. Sen Gupta, Alumni Ass. Bull. Oct 1955.



## SECTION V.

### REPORT OF THE SECTION OF PHYSIOLOGICAL AND INDUSTRIAL HYGIENE.

DR. M. N. RAO.

During the period under review, the Section continued its activities in the diverse fields of teaching, research and service.

#### *Administrative Changes*

##### (i) *INSTITUTE*

###### (a) *Senior Staff*

Dr. B. B. Chatterjee, one of the I.C.M.R. research officers who had been working in the Industrial Health Research Unit of the Indian Council of Medical Research, attached to this Section for over five years, joined the Section as an Assistant Professor of Physiological and Industrial Hygiene from 1st December, 1955.

Sri S. K. Banerjee, Research Assistant, was upgraded to the senior scale from, 9-12-54.

###### (b) *Junior Staff*

Sri Durgapada Roy joined the Section as a Laboratory Assistant vice Sri T. P. Bagchi who was transferred to the Administrative side from 15-2-1956.

###### (c) *Health Survey of the Sweepers and Scavengers*

The following temporary technical staff was appointed to carry out a short-term (3 months) project for the survey of occupational diseases among sweepers and scavengers sanctioned by the Union Ministry of Health:

- 2 Medical Officers,
- 1 Lady Medical Officer,
- 1 X-Ray Technician,
- 1 Computer,
- 1 Laboratory Technician.

##### (ii) *Indian Council of Medical Research.*

###### *A. Industrial Health Research Unit*

###### *Senior Staff*

Mr. A. Sen Gupta whose services were lent to Ahmedabad Textile Industry's Research Association from 25th November 1955 to 29th March 1956 for carrying out work in the field of environmental warmth reverted to his post after the expiry of his deputation period.

(b) *Junior Staff*

Miss Mary Solomon Judah joined in the post of the Medico-Social Worker fallen vacant due to the previous incumbent Miss K. K. Radhalaxmi leaving this Section on her appointment as an Assistant Professor of Medico-Social Work under the M.C.H. Scheme.

Mr. B. N. Chatterjee, one of the technicians was deputed to work in the Psychology Division at the Indian Institute of Technology, Khargpur, for a period of 3 months from 11-7-1955 to 11-10-1955 and has rejoined his duty on the expiry of the said period.

*B. National Tuberculosis Survey*

The following temporary staff has been appointed for the above-mentioned ICMR scheme located at this Section :

- 1 Medical Liaison Officer,
- 4 Field Assistants,
- 1 X-Ray Technician,
- 1 Laboratory Assistant.

(iii) *MCH Industrial Health Clinic : Urban Health Centre, Chetla :*

The following posts have been sanctioned for the Chetla Health Clinic :

- 1 Medical Officer,
- 1 Psychological Assistant,
- 1 Workshop Assistant.

Mr. M. S. Chakraborty joined as Workshop Assistant from 12-3-56. The other two posts have not yet been filled.

*Teaching*

The teaching work done by this Section can be broadly classified under three heads:—

- (1) Teaching for the general courses at the Institute or the special courses run by other Sections of the Institute.
- (2) Teaching for the specialised courses in Industrial Health, which is the specific responsibility of this Section and
- (3) Teaching for the courses conducted by outside agencies.

The Section participated in the usual teaching programmes of the various courses run at the Institute, viz., D.P.H., L.P.H., D.M.C.W., M.E.(P.H), and the Certificate Courses in Public Health Engineering. The Section also shared in the teaching responsibility and the development programme of the Maternal and Child Health Scheme, sponsored by the Government of India, the World Health Organization and the UNICEF to prepare certified nurses for different phases of community nursing services.

The teaching programme of the Section also included lectures and demonstrations to students of L.T.M. and D.T.M. & H. courses of the school of Tropical Medicine, the Diploma Course in Chest Diseases and the Social Welfare Workers' Course of the Calcutta University, the Health Visitors Course of the Sir John Anderson Health School and finally the Orientation Courses of the Ford Foundation Scheme.

### *Special Courses in Industrial Health*

#### *(a) Diploma Course in Industrial Health*

The Sixth Diploma Course in Industrial Health was conducted during the period under review. The teaching of Part II of the Course which is the sole responsibility of the Section commenced on 10-10-1955 and terminated on 16-3-1956. It comprised of a total of 85 hours of hospital work, 81 hours of practicals and demonstrations, 103 hours of field visits and 254 hours of didactic lectures. 3 medical graduates attended the course and appeared for the final examination.

#### *(b) Certificate Course in Industrial Hygiene*

The Tenth Certificate course was conducted from 2-1-1956 to 31-3-1956 and was attended by seven medical officers. One of the medical officers was a W.H.O. nominee from Burma, the rest being deputed by various industries. The teaching programme totalled 283 hours including 110 hours of field demonstrations and factory inspection visits and 11 hours of hospital clinics. All the seven candidates who appeared for the examination held at the conclusion of the course came out successful and were awarded certificates of proficiency in Industrial Hygiene.

### *Research*

#### *Papers Published :*

- (1) A preliminary investigation of the lighting conditions in some typical industries in Calcutta. N. L. Ramanathan, R. N. Mukherjee & B. K. N. Murthi: 1955. Indian Lighting. 1955. 1:2, p. 12.
- (2) Changes in the salt concentration of sweat during exercise in monsoon weather. N. L. Ramanathan, A. Sen Gupta & N. P. V. Lundgren: 1956. Ind. Jour. Med. Res., 1956, 44, p. 377.
- (3) Attitude Survey of Women Workers in a Calcutta Factory. T. Ganguly: 1955. Alumni Assoc. Bulletin, 1955, Vol. II, No. 3, pp. 37-41.
- (4) Chest X-Ray of Women workers in Industries in and around Calcutta. A. K. Banerjee: 1955. Alumni Assoc. Bull., 1955, Vol. II, No. 3, pp. 36-37.

### *Special*

(a) Dr. A. Jones, Medical Officer from Nigeria and a WHO fellow spent a week with this Section undergoing a short intensive training in Industrial Hygiene.

(b) Dr. Sven Forssman, Medical Adviser to the Employers' Federation, Sweden and W.H.O. Consultant on Occupational Health for SE Asia, spent about a month with this Section in the course of his W.H.O. assignment in India. The Section had undertaken the responsibility for arranging Dr. Forssman's Calcutta programme in the field of Industrial Health.

### *Services*

#### *(a) Mass Chest Radiographic Unit*

During the period under review, the Mass Chest Radiographic Unit continued its service to the industries around Calcutta. 2,600 workers in different industries were x-rayed in this connection.

#### *(b) National Tuberculosis Survey*

The Mass Chest Radiographic Unit is at present engaged in the National Tuberculosis Survey sponsored by the Indian Council of Medical Research. The activities of the Unit are at present confined to Calcutta. The survey team consisting of one medical liaison officer, an x-ray technician, 4 field assistants and one laboratory assistant together with the regular staff of the Section are working in the Calcutta area. A total number of 8,261 persons in 17 blocks in Calcutta city have so far been examined both radiologically as well as medically.

#### *(c) Health Survey of Sweepers and Scavengers*

Since the middle of January 1956, under instructions from the Union Ministry of Health, a survey of the health of sweepers and scavengers of Calcutta Corporation has been taken in hand. Uptodate more than 600 sweepers and scavengers have been medically examined. It is felt that additional three months' work would be necessary to enable the collection of a larger sample. A request has accordingly been made for the necessary sanction to continue the work for another three months. Findings will be reported after the statistical calculations on completion of the enquiry.

#### *(d) Cooperative Medical Care Programme amongst Industrial Workers*

Two of the sectional staff have been deputed temporarily to the Industrial Health Clinic at Chetla to develop a cooperative medical care programme amongst the industrial workers particularly in small-sized industries. A preliminary survey has already been completed. The Industrial Health Clinic is expected to start functioning fully from July 1956.

## SECTION VI.

### REPORT OF THE SECTION OF BIOCHEMISTRY AND NUTRITION.

DR. A. R. SUNDARARAJAN.

#### *Staff*

Dr. G. Sankaran, who was the Professor of the section since 1938 and has been on deputation to the Indian Penicillin Committee, retired from the Professorship in December, 1955. Dr. K. Rajagopal, Offg. Professor of the section has resigned. Dr. A. R. Sundararajan is in charge of the Section as Professor, since June, 1955. Dr. Kalyan Bagchi, Asst. Professor of Nutrition and Dietetics, has gone to U.K. for further study. Mr. G. Karmakar, Demonstrator has been promoted to the post of Asst. Professor of Bio-physics. Mr. G. R. Amritmahal, a demonstrator of this section has been promoted to the post of Asstt. Professor of Health Education and has left the section. Dr. S. Chowdhury, Demonstrator under M.C.H. scheme has resigned and gone to U.K. for higher study. Mr. S. Das, M.Sc., has been appointed demonstrator, in the place of Mr. G. R. Amritmahal. Miss Niva Sen Gupta, Dip. Diet., has joined the Section as Dietetian for the Urban Health Centre at Chetla.

Dr. A. R. Sundararajan has been appointed since June, 1955 as ex-Officio offg. Director of the Central Food Laboratory, now housed in this Institute. He was also appointed a Member of the Central Committee for Food Standards (Govt. of India).

#### *Teaching*

The section gave usual course of instruction in Nutrition and Public Health Chemistry, both theoretical and practical, to the students of D.P.H., L.P.H. and D.M.C.W. courses from June to September. Besides these general courses of the Institute, the Section took part in the following specialised courses:

- (i) Master of Engineering (Public Health).
- (ii) Diploma in Industrial Health.
- (iii) Certificate in Public Health Nursing.
- (iv) Certificate in Maternity and Child Welfare.
- (v) Certificate in Industrial Hygiene.
- (vi) Certificate in Laboratory Technique.
- (vii) Certificate in Public Health Engineering.

Two Diploma courses are special responsibility of the Section. These are Diploma in Dietetics and Diploma in Nutrition. The Dip. Diet. course is a nine months one and the students were trained in various aspects of Nutrition and Dietetics in the Institute and in the special Diet kitchen of the Calcutta Medical College Hospital. Some

eminent physicians of Calcutta gave some extra-mural lectures on diets in different diseases. The students were also deputed to work in some selected Industrial Canteens, for short periods, to have first hand knowledge on the working of industrial canteen. In the first part of the D.N. course, the students had training in various aspects of Public Health and in the second part, starting from October, they were given an intensive course of training in different aspects of Biochemistry, Nutrition, Dietetics and Food Technology, both theoretical and applied.

The Certificate course in Nutrition was held as usual from October to December. One Burmese student was deputed to this course by W.H.O.

The Section also took part in the field training programme of the different courses of this Institute at Singur Health Centre during the months of January and February.

For the Re-orientation course for the students of the Community Project under Ford Foundation, the staff of the Section took part in lectures, demonstration and field-survey work in Nutrition and Dietetics, at Singur.

In addition to the courses of study, offered by the Institute, the staff of the section took part in the teaching of the following courses:

- (i) D.T.M. (School of Tropical Medicine).
- (ii) L.T.M. (School of Tropical Medicine).
- (iii) Social Workers Course (Calcutta University).
- (iv) Health Visitors' Course (Sir John Anderson Health School of Indian Red Cross Society).

### *Routine Analytical Work*

Analysis of food-stuffs and water, estimations of vitamins, drugs and antibiotics were carried out in response to requests from different Government and Public Departments.

### *Research*

#### *I. Investigation on the Nutritional Status of School Children in an Urban Area (Chetla).*

The work in the Chetla Boys' School, was started with a view to finding out the incidence of various deficiency conditions among the school-children in Chetla. In all 345 children were examined clinically for evidence of deficiency manifestations, which were found to be quite prevalent. The age group ranged between 6-12 years. The nutrition survey revealed that Vit. A deficiency is common. Dryness and wrinkling of conjunctiva constituted about 28 per cent. and Bitot's Spots constituted about 6 per cent. of the deficiency. The deficiency of vitamin C in the form of sponginess and bleeding gums also formed a major percentage. Other deficiencies were not so common, excepting caries tooth which formed 23 per cent. of the total deficiency. Children showing vitamin A deficiency clinically were examined with Biophotometer to study their capacities for dark adaptation. Most of the cases

showed delayed adaptation to darkness, the degree of which could be correlated with the degree of clinical deficiency. Some of the children in the above group were treated with large doses of vitamin A and the effect was studied clinically as well as with Biophotometer; while the majority of cases showed improvement, though at different rates, a few cases did not respond.

## II. *Biochemical Investigation on the Effect of Oral Contraceptive, meta-Xylo-hydroquinone.*

Biochemical work in connection with the Enquiry on Oral Contraceptives was undertaken by this Section. During the period of review, N.P.N. an urea content of blood of 66 subjects, and total and differential counts of 21 subjects were determined after administration of m-xylo hydroquinone. The urines of 7 subjects were examined for the presence of albumin and casts.

## III. *Investigation on Metabolism of Vitamin A.*

Vitamin A, being a fat soluble substance cannot be directly used for tissue metabolism. In order to overcome this difficulty, a water soluble complex of vitamin A was prepared here by combining plasma albumin with vitamin A aldehyde (retinene). It gave a true solution as revealed by spectrophotometric study. In order to investigate the nature of combination between the albumin and vitamin A aldehyde, the electro-kienetic behavior of the complex was studied by the paper-electrophoretic method. An apparatus was improvised for the purpose from simple materials available in the laboratory.

The albumin-retinene complex, in veronal buffer, was allowed to migrate on a strip of paper under a potential gradient. After about four hours, it was found that the spaces traversed by albumin and retinene were equal in all sets of experiment.

From this it was concluded that the bond between retinene and albumin was of chemical nature and not one of mere absorption.

### *Papers Published*

1. Carotene content of Mangoes and their total Vitamin A activity. By G. Karmakar. Alum. Assoc. Bull. A.I.I.H. & P.H. Vol. II, 16, 1956.
  2. Aetiology of Phrynoderma, By S. R. Chowdhury and K. Rajagopal. Alum. Assoc. Bull. A.I.I.H. & P.H., Vol. II, 12, 1956.
  3. Electro-phoretic Studies on Albumin-retinene Complex. by P. K. Datta. Alum. Assoc. Bull. A.I.I.H. & P.H., Vol II, 1956 (October issue).
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## SECTION VII.

### REPORT OF THE SECTION OF MICROBIOLOGY.

DR. M. N. LAHIRI.

#### *Staff*

Dr. K. V. Krishnan, Professor of Microbiology and Director of the Institute was deputed by the Government of India to serve as a delegate in connection with the Health Mission to China and was away for over five weeks from the end of May to the end of the first week of July, 1955. He again proceeded on two months' leave from the 1st February, 1956 with permission to suffix the summer vacation i.e., April and May, 1956. During the periods of his absence, Dr. M. N. Lahiri, Associate Professor of Microbiology carried out the duties of the Professor of Microbiology in addition to his own.

#### *Teaching*

Instruction in Microbiology was given to students of the D.P.H., L.P.H., D.M.C.W., D.I.H., M.E.(P.H.) and D.N. courses. As in previous years, a special certificate course for the laboratory technicians' was conducted by the Section. A series of lectures and demonstrations were given to students taking short certificate course in Public Health Engineering, Maternity & Child Welfare as well as the certificate course in Public Health Nursing. This Section also gave a series of lectures and demonstrations to the newly started certificate course in Health Education and participated in the new D.C.H. course which was started at the Chittaranjan Seva Sadan. In addition, a special course of lectures was given to students of the Social Welfare Course of the University of Calcutta and also for the nurses from Sir John Anderson Health School to suit their requirements. As a result of the introduction of many new courses during the past few years, the teaching load of the Section has become very heavy.

#### *Laboratory Service*

##### *Prophylactic Inoculations*

Inoculations against Yellow Fever were given to a total of 2074 passengers and ships' crew proceeding to Africa and other places and certificates issued.

##### *Typhus Inoculations*

Prophylactic inoculations of typhus vaccine were given to two individuals.



*Kahn Test*

820 samples of blood were examined. 34 or 4.14 per cent. proved to be positive, 32 gave doubtful results and the rest were all negative. These samples were mainly received from the clinics under the Section of Maternity & Child Welfare of this Institute and from the Public Health Laboratories at Singur and Chetla.

*Bacteriological Examinations*

During the period under report, a total of 697 samples of water were examined for their bacteriological purity. Of these, 110 samples were found to be unsatisfactory and 92 samples suspicious. These samples were received from the following:—

1. Air Port Health Office, Dum Dum . . . . .	499
2. Port Health Office, Calcutta . . . . .	98
3. Corporation of Calcutta . . . . .	57
4. Central P.W.D., Calcutta . . . . .	10
5. Indian Association for the Cultivation of Science . . . . .	4
6. Reserve Bank of India, Calcutta . . . . .	1
7. Chittaranjan Locomotive Works . . . . .	1
8. Section of Sanitary Engineering of this Institute . . . . .	20
9. Urban Health Centre, Chetla, Calcutta . . . . .	4
10. Dufferin Hospital, Calcutta . . . . .	3

*Miscellaneous*

Eight specimens of sera for widal test were received from the Public Health Laboratory, Singur. In addition, many specimens for culture were also received from the Urban Health Centre, Chetla.

The Public Health Laboratory at Singur examined samples of clinical material totalling 11,401 during the period under report. These samples were mostly sent by the private practitioners at Singur who were

provided with the facilities for free laboratory service. The details of the laboratory tests performed are given below:—

*Blood :—*

Malarial parasite . . . . .	1,057
Differential Leucocyte Count . . . . .	1,780
Total R.B.C. & W.B.C. Count . . . . .	1,410
Haemoglobin Estimation . . . . .	523
E.S.R. Estimation . . . . .	199
Bleeding Time . . . . .	34
Coagulation Time . . . . .	34
Aldehyde Test . . . . .	74
Micro-filaria . . . . .	2
Colour Index . . . . .	443
Protein Estimation . . . . .	423

*Faeces :—*

For Helminthic Ova and Protozoa . . . . .	3,601
For Culture . . . . .	5

*Sputum :—*

Smear Examination : . . . . .	473
Throat Swab . . . . .	238
Pus . . . . .	1
Scraping from skin and mucous membrane . . . . .	2
Cervical Smear . . . . .	5

*Urine :—*

Chemical and Microscopical Examination . . . . .	1,125
For Culture . . . . .	2

*Research*

*Cholera*

*Artificial Infection Experiments*

The object of the study was to find out the possibility of mutation of cholera vibrios and to determine the serology of the inagglutinable vibrios suspected to be mutants. During the period, 10 series of artificial infection experiments were conducted with 4 species of hardy fishes viz.,

(i) *Climbing perch* (*Anabas testudineus*), (ii) cat fishes (*Heteropeneustes fossilis* and *Clarias magur*) and (iii) the Murrel (*Ophicephalus punctatus*). Specimens obtained from their natural habitats were kept under observation in the laboratory till they ceased to excrete vibrios. It was observed that these species of fish continued to excrete vibrios for a period of 4 to 5 months. This corroborates the observations mentioned in the last year's report regarding the natural excretion of non-agglutinable vibrios by the fish. In artificial infection experiments, specimens of fish rendered vibrios-free, for a period of 5 months, were infected with both the Inaba and Ogawa sub-types of *V. cholerae*. All the specimens excreted agglutinating vibrios for a period of 3 to 4 days subsequent to the infection. In each case, they excreted inagglutinable vibrios for varying periods of time within a maximum of 15 days after infection. The inagglutinable vibrios excreted in the initial stages invariably belonged to Heiberg's Group VI. In a few cases, inagglutinable vibrios of Groups I and II were excreted after a few days, but it is interesting to note that in every case, the N.A.G.'s vibrios excreted belonged to these groups only i.e., Groups VI, I & II.

With a view to ascertain whether artificial infection with cholera vibrios would stimulate the excretion of N.A.G. vibrios which may be retained in the guts of fishes presumed to be vibrio-free in the experiments, artificial infection was tried with other pathogenic organisms viz., *Salmonella typhi* and *Sh. flexneri*, but none of the infected fish excreted any N.A.G. vibrios. These experiments lent further support to the surmise that *V. cholerae* might actually be undergoing some change in the guts of fishes. Serological studies of the N.A.G. vibrios of Group VI isolated after infection were conducted. It was observed that Group VI vibrios obtained from the same species of fish were serologically identical, but the same group isolated from different species showed serological differences.

A number of high titre sera have been raised against inagglutinable vibrios belonging to Groups VI, I and II. Since Group VI vibrios were initially excreted, four sets of experiments were carried out by artificially infecting vibrio-free fish with such vibrios to find out whether subsequently other groups appear or not. It was interesting to observe that after such feeds, the fish excreted vibrios belonging to Groups I and II. Before carrying out these experiments, a number of fish from the same lot were dissected to ensure that they were all vibrio-free. For these purposes, intestine, bile and gills of fish were cultured separately but no vibrio could be isolated. The water as well as the food on which these fishes are reared, were constantly examined to demonstrate the absence of vibrios. The vibrios are now being tested to find out if there is any correlation serologically or biochemically. This work is being continued.

#### *Modification of the technique of isolation*

It was recorded previously that comparative studies of culture techniques had indicated that the cultures should be incubated for 48 to 72 hours to obtain satisfactory results. Further studies were made using cholera stools from cases admitted into the Nilratan Sarkar

Medical College Hospital, Calcutta, as also water and gut-content samples from fish. Cultures which were negative after 24 hours of incubation, showed good growth of vibrios after 48 and 72 hours of incubation. A pH of 8.4 was found to be most suitable for the growth as well as the survival of vibrios. In view of these findings, it is considered necessary to re-examine the data collected during the previous years regarding the absence of cholera vibrios in water and other sources.

### *Phage typing of V. cholerae*

This study is considered essential to evolve a phage typing method which may be helpful in epidemiological investigations of cholera. The use of phages may also prove helpful to elucidate the interrelationship between the *V. cholerae* and other non-agglutinable vibrios excreted by cholera patients.

Preliminary work was made on the standardization of media for isolating *V. cholerae* including the phage carrying strains and non-agglutinable vibrios from cholera cases. Swabs dipped in catheter specimens of stool yielded more positive isolations compared to rectal swabs obtained directly. With further improvement in the technique, it may be possible to employ the rectal swabs alone which would be of great help. The strains of *V. cholerae* isolated during the epidemic has been found to be of inaba sub-type only. These and other non-agglutinable vibrios are being maintained for future investigations. 15 phage strains were obtained from cholera stools. Strains of *V. cholerae* including those carrying phages are being studied for further isolations. Experiments are in progress to obtain pure line phages and to determine their nature. So far all the phages from stool filtrates have been propagated in association with the corresponding strain of *V. cholerae* isolated from the same samples of stool.

A start has been made to find out a convenient method to lyophilise a large number of vibrio strains so far isolated as well as the phage preparations. Work on lyophilization however received some set-back due to break down of the machine which has recently been rectified.

During the routine propagation of the maintenance of stock phages, it was observed that certain phage preparations were very unstable when stored at 0-4°C. Further isolations of *V. cholerae* and phages are being made from the epidemic which occurred towards the end of the period under report.

The Section is collaborating with the Section of Sanitary Engineering in an investigation on the "Effect of Sewage Treatment Method on the Viability of Tubercle Bacilli."

Under the National Tuberculosis Survey, cultural examinations of the laryngeal swabs and sputa from suspected cases of tuberculosis detected by the Mass Chest Radiography have just been started and the results of the investigations will be reported later.

## SECTION VIII.

### REPORT OF THE SECTION OF STATISTICS

DR. C. CHANDRASEKARAN.

Sri K. K. Mathen, Assistant Professor of the section left for the U.S.A. in January 1956 to prosecute higher studies and Sri S. C. Bhowmik, Demonstrator in statistics officiated in his place. Dr. C. Chandrasekaran, Professor of Statistics served as a Discussion Leader in the United Nations Seminar on Population in Asia and Far East held in Bandung, Indonesia, in November 1955.

#### *Teaching*

The section gave the prescribed lectures and demonstrations to students enrolled for the D.P.H., L.P.H., M.E. (Public Health), D.M. & C.W., D.I.H., Diploma in Dietetics and Diploma in Public Health Nursing courses, the certificate course in Health Education and the short courses in Public Health Engineering, Industrial Hygiene and Maternity and Child Welfare. In addition to the regular course in Biometric Technique which was attended by five students during this year, a special course of training in Health and Vital statistics for a period of six months was given to two foreign students sponsored by the W.H.O., one from Burma and the other from Indonesia. The usual lectures in vital statistics for the students of the D.T.M. and L.T.M. classes of the School of Tropical Medicine and the T.D.D. course of the Calcutta Medical College were also given during the year. Four batches of students undergoing the Reorientation course in public health under the Ford Foundation Scheme, were also given lectures and demonstrations in Vital Statistics.

#### *Research and other activities*

##### *(a) Vital statistics Registration in Singur Health Centre*

A new system of Vital Statistics registration, which in addition to the official agency made use of the services of health personnel and voluntary agents for reporting vital events, was introduced in the Singur Health Centre in 1946. A survey was also conducted in 1947 to assess the extent of registration of births and deaths and provide a base line for studying future improvements. The survey of 1947 showed that about 60 per cent. of births and 50 per cent. of deaths only were registered in the area in 1946.

Vital Statistics of the Health Centre area for 1946-1954 were analysed with the dual object of studying the trend of vital events in the area and examining the benefits that have accrued from the new system. The average birth and death rates in the area during 1952-54 was 38.5 and 10.2 respectively. From the level of the birth rate it may be surmised that about 90 per cent. of births are being registered. The level of the registration of deaths was harder to establish and is still under investigation. Reporting of the cause of death required further improvement. Cause of death was specifically known in only less than half of the total

deaths during 1952-54. The available data showed that, in general, the death rates at different ages and from specific causes showed definite downward trends during the period.

(b) *Maturity-meter for Indian babies*

Using the results available from a previous study by Leila Ghosh and Chandrasekaran, of the measurements of the weights and length of babies born in some Calcutta Hospitals, an instrument was devised which would give at a glance the birth weight required for boys and girls of varying lengths, for their being classified as mature babies. This instrument can be handled easily and can conveniently form part of the field equipment of the health visitor or the public health nurse.

(c) *Comparative study of the growth of African and Indian Infants*

Measurements of the weights of a group of mature babies belonging to an African community in Western Nigeria, taken at periodic intervals from birth to the end of the first year of life were analysed to obtain the pattern of growth. The average weight at birth and the increase in weight in the first year of life of the African children showed close resemblance to those of Indian infants.

(d) *Rural field study of Population Control in Singur*

The project is primarily an attempt to test out and evolve methods for educating rapidly the rural people in simple family planning methods. The study will be located in villages bordering on the Singur Health Centre area and the value of the educational techniques will be assessed by their effect on the birth rate of the community. The project is financed by the Population Council of New York and is expected to extend for a period of three years. Responsibility for the planning and execution of the project would rest on an administrative committee consisting of the Professors of Public Health Administration, Maternity & Child Welfare, Health Education and Statistics with the Professor of Statistics acting as the Study Director. During the period under review a skeleton staff was recruited and some preliminary work such as listing of the households and preparation of maps showing location of houses was done.

(e) *Population Survey at the Chetla Urban Health Centre*

In order to obtain basic information for the planning and evaluation of the various health services in the newly formed Chetla Health Centre, the Statistics Section, in collaboration with other sections of the Institute, began a demographic survey in it. One out of the ten census circles of the area was surveyed during the period November 1955 to March 1956 by employing some of the staff of the Maternity & Child Welfare, and the Statistics Sections. It is proposed to extend the survey to the other circles when the field staff required for the purpose is sanctioned by the Government.

Information collected related to population characteristics such as age, sex, marital status, language and occupation, births and deaths which occurred during the past one year, the incidence of chronic illness and the sanitary condition of houses. Preliminary analysis of the survey data showed that the sex ratio was 63 females to 100 males and the crude birth rate 32 per 1000. Over 80 per cent of the births occurred in institutions. About 7 per cent of the population suffered from chronic illnesses of three or more months durations. About one quarter of such chronic sickness was due to the diseases of the digestive system.

(f) *Research on the use of synthetic Meta-xylohydroquinone as an Oral Contraceptive*

Earlier work on adult rats had showed that *Pisum Sativum* Linn (common field pea) and its active principle meta-xylohydroquinone has anti-fertility effects. This result encouraged two workers in Calcutta to conduct a human trial with synthetically prepared meta-xylohydroquinone. The design called for the oral administration of 150 mg. of the drug on the 16th and the 21st day after the onset of menstruation. The results of this trial were hard to assess although they seemed to indicate that the drug was effective in reducing the pregnancy rate. The mode of action of the drug was also of interest as the drug had been shown to act as an abortifacient in mice.

In order to examine the possibilities of the use of the drug as an oral contraceptive, a research project was proposed in collaboration with the M.&C.W. Section and was approved by the Programme and Research Committee on Family Planning of the Government of India. The project envisaged an adequately planned field trial to study the following three aspects.

- (1) The effectiveness of the drug in reducing the pregnancy rate.
- (2) Its mode of action and
- (3) The toxic effects of the drug if any.

An area surrounding a Maternity Home in the city has been selected and women living within this area are allowed to enrol for the study. Before enrolment each woman is medically examined and her reproductive history is noted. Women with no living child or with kidney or liver damage are not enrolled for the study. Women enrolled for the study are kept under close observation and their menstrual onset dates are carefully recorded. The drug is administered on the 16th and the 21st day of the menstrual cycle in doses of 300-400 mg. of the drug. Women who have not resumed menstruation after the termination of the last pregnancy are given one dose every fifteenth day. Clinical examination and the "toad test" are being used to detect pregnancy at the time of enrolment or subsequently. Blood and urine specimens, vaginal smears and endometrial biopsies are examined periodically with a view to study the probable toxic effects of the drug and its mode of action.

Since January 1956 about 100 cases from the experimental area have been enrolled for study. About 200 cases enrolled for a previous

field trial are also followed up according to the new experimental design. No definite conclusion on the value of the drug has been reached so far. It is proposed to continue the study both by including additional women and by following those who are already enrolled.

(g) *Survey of Tuberculosis Morbidity in India*

The Professor of Statistics has been acting as the Statistical Adviser to a survey initiated under the auspices of the Indian Council of Medical Research, to assess the tuberculosis morbidity in certain parts of India. Six large zones comprising a population of about 140 million have been included for the survey. The largest city, six medium sized towns of population between 10,000 and 50,000 and about 30 villages are selected from each zone for the survey. The sampling scheme envisages the examination of the population of forty census blocks in the city, of 10 per cent census blocks in the towns and of the entire population from the 30 villages. The tuberculosis morbidity is assessed from the data of the X-ray examination done with the help of a mobile X-ray van and of the bacteriological examination of the sputum of persons whose X-rays are not normal.

*PUBLICATIONS.*

- |   |   |
|---|---|
| C. Chandrasekaran, S. P. Agarwala and P. N. Chakraborty (1955). | On the power function of test of significance for the difference between two proportions "Sankhya" Vol. 15, Part 4. |
| S. C. Bhowmik (1955).   | Growth data of African Infants "Alumni Association Bulletin" Vol. II., No. 3.                                       |
| M. V. Raman (1955).   | Maturity standards for Infants at birth. Alumni Association Bulletin Vol. II, No. 3.                                |
| C. Chadrasekaran.   | Report of the U. N. Seminar on Population in Asia and Far East (1956) Le Demographe.                                |



## PART III

### APPENDIX I

Scientific Advisory Committee for the All India Institute of Hygiene and Public Health, Calcutta.

Subject to the ultimate control of the Government of India, the Scientific Control over the Institute vests in the Scientific Advisory Committee. The members of this body during the year under review, were as follows :—

1. CHAIRMAN —The Hon'ble Minister for Health or the Secretary to the Government of India, Ministry of Health, if deputed by the Hon'ble Minister by General or special order to act as Chairman on his or her behalf.
2. MEMBERS—The Director General of Health Services.
3. One of the Deputy Director General of Health Services.
4. The Director, School of Tropical Medicine, Calcutta.
5. The Director, All India Institute of Hygiene and Public Health Calcutta.
6. One Medical or non-medical Scientist member of the Governing Body of the Indian Council of Medical Research to be elected by the body.
7. One Medical or non-official Member of the Governing Body of the Indian Council of Medical Research.
8. One of the representatives of the Parliament on the Governing Body of the Indian Council of Medical Research.
9. SECRETARY—One of the Deputy Director Generals of Health Services, who will be member of the Board.

## APPENDIX II

*Statement showing the Technical Staff (Gazetted and non-gazetted)  
as on 31st March, 1956.*

I. *Section of Microbiology.*—

- |   |                        |
|---|------------------------|
| (1) Professor & Director . . . . .              | Dr. K. V. Krishnan.    |
| (2) Associate Professor . . . . .               | Dr. M. N. Lahiri.      |
| (3) Assistant Professor . . . . .               | Dr. P. N. Bose.        |
|   | Dr. B. K. Ghosh Roy.   |
| Hony. Assistant Prof., Public Health Laboratory | Dr. N. C. Talapatra.   |
| (4) Demonstrator . . . . .                      | Dr. M. S. Gupta.       |
|   | R N. Ghosh (On leave). |
|   | Dr. B. P. Bose.        |

II. *Section of public Health Administration.*—

- |   |                         |
|---|-------------------------|
| (1) Professor . . . . .                         | Dr. K. S. Viswanathan.  |
| (2) Associate Prof. of Social Medicine (MCH). . | Dr. K. C. Patnaik.      |
| (3) Assistant Professor of P. H. Admn. . . .    | Dr. A. K. Banerjee.     |
| (4) Assistant Professor & O. C. Singur . . .    | Dr. P. C. Sen.          |
| (5) Assistant Professor of Medical Social Work  | Miss. K. K. Radhalaxmi. |
| (6) Assistant Professor of Health Education .   | Shri G. R. Amritmahal.  |
| (7) Demonstrator . . . . .                      | Dr Abdur Rahaman(MCH).  |
|   | Dr. P. K. Mookherjee.   |
| (8) Rural Medical Officer of Health.            |                         |

III. *Section of Epidemiology.*—

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|-----------------------------------|--------------------------|
| (1) Professor . . . . .           | Dr. S. C. Seal.          |
| (2) Associate Professor . . . . . | Dr. L. M. Bhattacharjee. |
| (3) Assistant Professor . . . . . | Dr. A. L. Saha.          |
| (4) Demonstrator . . . . .        | Shri P. M. Roy.          |
|                                   | Dr. A. Ghosh Hazra.      |
|                                   | Dr. Sunil Kumar De.      |

IV. *Section of Biochemistry & Nutrition.*—

- |  |                                    |
|--|------------------------------------|
| (1) Professor . . . . .                      | Dr. A. R. Sundararajan.            |
| (2) Assistant Professor of Dietetics . . . . | Dr. Kalyan Bagchi (on deputation). |
| (3) Assistant Professor of B. & N. . . . .   | Dr. P. K. Datta.                   |

## APPENDIX II—contd.

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|--|---------------------------|
| (4) Assistant Professor of Biophysics . . . . .      | Shri G. Karmakar.         |
| (5) Hony. Prof. of Public Health Chemistry . . . . . | Shri S. C. Chakrabarty.   |
| (6) Tutor Dietetian . . . . .                        | Dr. (Mrs.) Biva Banerjee. |
| (7) Demonstrator . . . . .                           | Shri S. R. Chowdhury      |
|  | Shri S. K. Neogy.         |
|  | Dr. K. K. Halder.         |
|  | Shri Sunil Chowdhury.     |

V. *Section of M. & C. W.*—

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|--|--------------------------|
| (1) Professor . . . . .                                  | Dr. (Mrs.) M. Sen.       |
| (2) Lady Assistant Prof. of M. & C. W. . . . .           | Dr. (Miss) N. J. Sethna. |
| (3) Assistant Professor of Psychology . . . . .          | Dr. K. C. Mookherjee.    |
| (4) Assistant Professor of P. H. Nursing . . . . .       | Mrs. S. Zacharia.        |
| (5) Assistant Prof. of Midwifery Nursing (MCH) . . . . . | Mrs. E. E. David.        |
| (6) Demonstrator . . . . .                               | Dr. (Mrs.) J. Rai.       |

VI. *Section of Sany. Engineering.*—

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|---|---------------------------|
| (1) Professor . . . . .                                   | Sri F. K. Erickson.       |
| (2) Associate Prof. of Environmental Sanitation . . . . . | Sri N. Majumder.          |
| (3) Assistant Professor . . . . .                         | Dr. T. R. Bhaskaran.      |
| (4) Technical Assistant . . . . .                         | Sri M. A. Sampathkumaran. |
|   | Sri G. Ekambaram.         |
| (5) Demonstrator . . . . .                                | Sri J. N. Sengupta.       |
| (6) P. H. Inspector . . . . .                             | Sri B. K. Roy Chowdhury.  |
| (7) Senior Draftsman . . . . .                            | Sri J. C. Biswas.         |

VII. *Section of Statistics.*—

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|-----------------------------------|-------------------------|
| (1) Professor . . . . .           | Dr. C. Chandrasekharan. |
| (2) Assistant Professor . . . . . | Mr. K. K. Mathen.       |
| (3) Demonstrator . . . . .        | Sri P. N. Chakrabarty.  |
|                                   | Sri P. Sinha.           |
|                                   | Sri K. B. Das Gupta.    |

VIII. *Section of Physiological & Industrial Hygiene.*—

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|-----------------------------------|-----------------------|
| (1) Professor . . . . .           | Dr. M. N. Rao.        |
| (2) Assistant Professor . . . . . | Shri C. V. Sabnis.    |
|                                   | Dr. B. B. Chatterjee. |
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## APPENDIX II—concl'd.

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|--|----------------------|
| (3) Medical Officer (Mass Chest X-Ray) . . . . . | Dr. A. K. Banerjee.  |
| (4) Research Assistant . . . . .                 | Shri S. K. Banerjee. |
| (5) Demonstrator . . . . .                       | Dr. A. B. Sur.       |
|  | Dr. R. N. Mukherjee. |

IX. *Administration.*—

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|--------------------------------------|--------------------------|
| (1) Director . . . . .               | Dr. K. V. Krishnan.      |
| (2) Deputy Director. (MCH) . . . . . | Dr. S. E. D. Masilamani. |
| (3) Administrative Officer . . . . . | Shri S. Rajagopal.       |
| (4) Superintendents . . . . .        | Shri M. K. Sinha.        |
| ,, . . . . .                         | Shri J. K. Bhowmik.      |
| ,, . . . . .                         | Shri G. C. Bose.         |

X. *W. H. O. Personnel.*—

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|--|------------------------|
| (1) Visiting Professor of Pediatrics . . . . .   | Dr. D. B. Jelliffe.    |
| (2) Paediatric Nurse . . . . .                   | Miss Alison G. Cathie. |
| (3) Instructor in P. H. Nursing & Midwifery      | Miss I. M. Lovedee.    |
| (4) Instructor in P. H. Nursing . . . . .        | Miss M. Mackenjee.     |
| (5) Visiting Prof. of Health Education . . . . . | Dr. M. R. Fields.      |
| (6) Administrative Officer . . . . .             | Mr. E. C. Garraty.     |
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## APPENDIX III

*List of courses given in 1955-56 and number of students admitted to each course.*

Courses.	Duration of Course.	No. of Student Admitted.
1. D. P. H. . . . .	One academic year.	60
2. L. P. H. . . . .	Do. . . . .	12
3. D. M. & C. W. . . . .	Do. . . . .	15
4. D. I. H. . . . .	Do. . . . .	4
5. D. N. . . . .	Do. . . . .	3
6. Dip. Diet. . . . .	Do. . . . .	6
7. ME. (P. H.) . . . . .	Do. . . . .	10
8. D. Sc. . . . .	Two years . . . .	Nil
9. Public Health Nursing (certificate course)	3 months . . . .	24
10. Biometric Technique (Short course) . . . .	Do. . . . .	5
11. Nutrition . . . . .	Do. . . . .	1
12. Laboratory Technique (short course) . . . .	6 months . . . .	21
13. Maternity & Child Welfare (Short Course)	3 months . . . .	8
14. Industrial Hygiene . . . . .	Do. . . . .	7
15. Public Health Engineering . . . . .	6 months (3 months theoretical and 3 months practical).	8
16. Village water supply and sanitation . . . .	8 weeks . . . . .	6
17. Orientation course in Public Health—	(1) Term 8 weeks . .	6
	(2) Term „ . . . .	13
	(3) Term „ . . . .	21
	(4) Term „ . . . .	16
		246

**APPENDIX IV**  
*Total and average number of students from various state in India and outside between the period 1932-1946 and 1946-56.*

States	1932-46 (14 yrs.)	1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
	Total Yearly Average										
Sikkim	..	..	..	..	..	..	..	..	..	..	1
Nepal	..	..	..	..	..	..	..	..	..	..	1
Afghanistan	..	..	..	..	..	..	..	1	..	1	..
Indonesia	..	..	..	..	..	..	..	..	..	..	2
Ajmer	..	1	1	..	..	1	..	..	..	..	..
Andhra	..	..	..	..	..	..	..	..	1	8	15
Assam	9	3	7	3	2	4	1	1	10	10	16
Bhopal	..	..	2	1	..	..	..	..	..	..	1
Bihar	26	10	8	6	8	7	4	4	15	23	22
Bombay	13	3	4	5	10	5	6	5	9	4	13
Burma	8	..	..	..	..	..	..	4	2	1	2
China	5	..	..	..	..	..	..	..	..	..	..
Coorg	1	1	..	..	1	..	..	..	..	..	2
Cutch	..	..	..	1	..	..	..	..	..	1	2
Delhi	2	..	..	1	2	1	1	..	6	..	5
East Punjab	29	2	9	5	4	6	4	2	10	10	13
French India	..	..	..	..	..	..	..	1	2	..	2
Goa	..	..	..	..	..	..	..	..	..	..	..
Himachal Pradesh	..	..	..	..	1	..	..	1	4	1	6
Hyderabad	24	4	1	2	5	3	1	3	2	4	6
Jammu & Kashmir	1	2	..	..	..	..	1	3	5	2	3

## APPENDIX IV—contd.

States.	1932-46 (14 yrs.)		1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
	Total Yearly Average											
Madhya Pradesh	3	21	4	5	5	2	1	2	1	4	6	10
Madhya Bharat	4	28	..	2	2	2	..	1	..	..	..	6
Madras	26	185	3	9	16	16	17	9	6	8	4	6
Manipur	..	..	..	..	1	..	..	..	..	6	..	..
North East Frontier Agency	..	..	..	..	..	..	..	..	..	4	..	..
Mysore	17	121	5	2	8	11	7	5	8	..	4	8
Orissa	5	35	3	5	1	1	3	1	2	13	14	16
Pakistan	6	42	3	..	2	3	..	..	..	1	..	..
Pepsu	..	..	1	..	2	..	5	2	1	3	1	5
Rajasthan	1	07	4	3	2	2	2	2	..	2	2	..
Saurashtra	..	..	..	1	..	..	..	2	..	1	2	1
Thailand	..	..	..	..	..	..	..	1	1	3	1	..
Tippera	..	..	1	1	..	..	..	..	..	1	6	7
T. Cochin	6	42	1	4	2	1	..	3	1	..	6	7
Uttar Pradesh	44	314	11	12	13	16	20	16	16	21	18	18
Vindhya Pradesh	..	..	1	1	..	..	..	..	..	2	2	1
West Bengal	176	1257	28	37	45	42	40	50	39	40	47	80
Not known	6	42	..	..	..	..	..	..	..	..	..	..
Total	412	2869	91	114	124	129	122	114	100	176	178	276

## APPENDIX V

*Average No. of students from various services for period 1932 to 1946 and 1946 to 1956.*

Services	1932-46 (14 yrs. )	1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56
	Total Yearly Average										
1. Army service . . . . .	7	5	6	2	2	..	..	.	1	2	3
2. Port Health Deptt. Under Central Govt. . . . .	..	..	..	..	..	3	2	3	1	1	..
3. Provincial (State) Medical & Public Health Service, etc.	103	7 35	50	69	73	53	44	43	106	114	112
4. Women's Medical Service . . . . .	2	14	2	1	..	..	..	..	..	..	..
5. Public Health services under Local Bodies	72	5 14	12	4	7	..	6	..	4	4	11
6. Railway Service . . . . .	17	1 21	5	4	2	4	1	1	5	1	3
7. Services under other agencies, factories, Mills, Mercantile Firm's, shipping companies, etc.	15	1 7	8	8	5	..	7	7	6	5	10
8. Deputed by other Foreign Govt, W. H. O., etc.	5	35	..	2	3	..	3	7	8	5	7
9. Unattached . . . . .	191	13 21	31	34	37	62	51	41	45	48	130
Total . . . . .	412	28 52	114	124	129	122	114	108	176	180	276



## APPENDIX VI

*Results of examinations for the various courses for 1955-56.*

Courses.	1955-1956.	
	No. appeared.	No. passed.
1. D. P. H.—		
Part I . . . . .	53	53
Part II . . . . .	53	46
2. L. P. H.—		
Part I . . . . .	11	11
Part II . . . . .	11	9
3. D. M. & C. W. . . . .	14	14
4. Dip. Diet. . . . .	5	2
5. M. E. (P. H.) . . . . .	10	7
6. D. I. H.—		
Part I . . . . .	3	2
Part II . . . . .	3	3
7. D. N.—		
Part I . . . . .	1	1
Part II . . . . .	2	2
8. <i>Certificate courses.</i> —		
(a) Certificate course in Public Health Nursing	24	23
(b) Laboratory Technique . . . . .	19	18
(c) Industrial Hygiene . . . . .	7	7
(d) P. H. Engineering . . . . .	7	5
(e) Nutrition . . . . .	1	1
(f) Biometric Technique . . . . .	5	5
(g) M. & C. W. . . . .	7	7
(h) Orientation course in Public Health . . .	86	86
(i) Certificate course in Village water supply and sanitation.	6	6









